

# FRESHGO

A exploration and innovation of  
the 15-minute city  
in the supply of fresh food  
under the background of the big city

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# ABSTRACT

Covid-19 is sweeping the world and has had a significant impact on all sectors of the economy in all countries. In China, many cities have experienced long or short city closures or other restrictions to reduce the risk of infection, which has had a significant impact on the daily shopping lives of residents. A major concern is the availability of a steady supply of fresh food. In large cities, the fresh food supply chain is complex, involving many industries working together and requiring high human resources costs to ensure proper operation. It is clear that there are not enough people to produce and transport the food during periods of urban closure, which affects large cities in particular.

Although most cities in China have now returned to normal operations, the pandemic's impact was huge and far-reaching. People are also becoming aware of the importance of social distance and are getting used to living in small communities. At the same time, the pace of life for young people is relatively fast, so more and more young people prefer to order fresh food online and have it delivered to their homes rather than going directly to an offline shop. This has led to the rapid growth of fresh produce e-commerce. While fresh produce platforms have exploded, they also face many challenges: the spatial scale of China's big cities is vast, and sometimes delivery takes a long time. In contrast, fresh food requires harsh preservation conditions, and fresh produce delivery is confusing. These issues need to be addressed quickly, and the concept of a 15-minute city has been repeatedly highlighted. This article is dedicated to analysing the needs of people living in large cities in the post-pandemic era and to provide solutions for building a 15-minute city for fresh food.

**key words:** covid-19, fresh food shopping, fifteen-minute city, sustainability, business innovation, product design.

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# Introduction

栗入りあげまん  
Chestnut  
¥250  
NEW!  
栗入りあんこにフダンとほろしお餅に片栗粉  
Chestnut mnyku + Bnan

200円 Sweet potato  
170円 Sesame  
150円

¥130  
Green Tea ¥170  
Pumpkin ¥170  
Sweet Potato ¥170  
Sesame ¥150  
chocolate ¥200  
Custard cream ¥200



## I.1 Motivation

The global pandemic of Coronavirus Pneumonia has become the norm and has a significant impact on all aspects of people's lives. With 250 million infections and 5.05 million deaths worldwide to date, it is a catastrophe of great magnitude for the entire world. In the first and middle stages of the epidemic, many countries have resorted to blockading countries and regions to contain the new outbreak, but this has led to many problems: 1. People's daily shopping needs have not been well met, with consumption levels falling in the epidemic's early stages while the market to buy essential goods has not been well satisfied. 2. Products with a longer shelf life can withstand more extended storage and are less affected, but fresh fruit and vegetables industries are greatly affected. Also, industries that need to sell fresh food directly to their customers have been greatly affected by the issue of clientele.

Fortunately, after an extended period, and thanks to the efforts of people around the world, vaccines have been developed in many countries. China also developed its vaccine and administered it to everyone at the first opportunity, finally bringing the epidemic under control. By the middle and end of the epidemic, the need for economic recovery was increasing. It became clear that quarantine was no longer appropriate for most areas and that a proper social safety distance programme was needed. But the epidemic, which has lasted for over a year, has severely disrupted everyday life and has had a profound and lasting impact on how people worldwide live and behave. According to research on consumers' changing consumption priorities, half of all consumers worldwide say the epidemic has permanently altered their spending habits. The level of spending on eating out and travel is likely to remain low for a long time, with health concerns rising to an unprecedented level and a growing preference for online shopping and cooking at home, leading to an increase in demand for fresh food in the mid to late stages of the epidemic rather than a decrease. At the same time, the existing business model of Various types of community group buying still relies on the deep involvement of takeaways.

In addition to this, many other issues have been exposed at an accelerated pace during the epidemic. In China, for example, many large cities are mostly large in size and even more significant in spatial scale. These vast cities are not complemented by an excellent infrastructure to make life more convenient for people, but instead lead to people wasting more time "on the road". The



call for a "15-minute city" is becoming louder and louder.

## 1.2 Intention

- Learn how the needs of the people in the heart of the epidemic (in the big cities) have changed and what problems they are facing.
- Understand and analyse the concept of the "15-minute city" and find ideas to solve existing problems.
- Analyse and understand the much-criticised online fresh food market. This includes but is not limited to the original problems of the fresh produce market, the direction of development of the internet fresh produce market and its issues.
- The concept of the 15-minute urban living circle to achieve the last mile of delivery of fresh produce. To enhance the user's experience of buying fresh produce and increase the user's confidence in buying fresh produce online.

## 1.3 Methodology

The whole line is mainly along the lines of the research design of the two-diamond model.

The article starts with the identification of the actual problems that exist. After a brief listing of the issues, I move on to the discovery/summary phase of the two-diamond model (dispersion), designed to provide a more comprehensive and objective insight into the problems. In this phase, I used a combination of background research and user research.

The background research phase mainly started with an analysis of the social trends in China, followed by a lot of secondary research such as literature research and policy research. Finally, a rough and superficial knowledge of the industry/policy/users was gained. To gain a deeper understanding of who is involved in the industry, I also carried out a list of stakeholders.

After the background research came the user research. In the user research phase, I adopted a combination of Quantitative research and Qualitative research methods to analyse the needs of different users. In the Quantitative research phase, the questionnaire was used as the primary research method, supplemented by some data research to obtain accurate user data. In the Qualitative research phase, many interviews were conducted to get a comprehensive and holistic view of the industry. The interviewees were a mix of users, industry practitioners and industry experts. This resulted in a large number of key insights.

After the first stage of the two-diamond model has been developed, the second stage is to define and summarise the problems identified and identify opportunities in these summaries and target the final direction of the research in preparation for the solutions that follow. This stage is more of a summing up and closing down phase.

In this stage, the most relevant User portraits were first summarised using the previous data. Different summarisation tools were used to define the final problem in the paper as "solving the last-mile delivery problem of fresh produce".

After the first two phases of the Double Diamond model were completed, the product design phase was launched.

In the early stages of product design, the article first conducted research and analysis of existing products (using various research techniques such as SWOT analysis): the current takeaway insulated box and the smart takeaway preservation cabinet. From this research, more information was obtained about the shortcomings and improvements of the existing products. This was followed by research into the relevant technologies to ensure the feasibility of the "active cooling" idea. This was followed by many ideas development and iterations, resulting in the concept of FRESHGO's "Active Refrigeration Takeaway Box" and "Short Time Fresh Food Storage Centre".

# 002 THE CHALLENGES



## 2.1 There are chaos in the sales of domestic fresh food market, especially in in the delivery of takeaways

With the rapid development of China's express delivery industry, in just a dozen years, e-commerce shopping has experienced a development path from scratch to complete. However, the rapid development will inevitably lead to many problems that cannot be solved well, the e-commerce fresh food market is a particularly serious part of the chaos. The problems faced by the traditional fresh food market such as "difficulty in building cold chain logistics", "high difficulty in unifying quality", and "high cost of fresh food storage" have not been solved, and the addition of the Internet has directly transformed the original "c-b-s-b-c" sales model into "c-b-c". Since the sales model has lost the quality control of small businesses such as supermarkets and vegetable markets in the middle part, the fresh food market has become very chaotic. At the same time, the original cold chain logistics has ended at the part of supermarket/vegetable market, but most of the Internet-to-C business model needs to deliver goods to customers. This means that the original cold chain has been extended for more sections, and there are also many problems in the cold chain logistics in the last section of the extension.

### **Bacterial reproduction caused by cold chain breakage, and problems will occur if the temperature is not too cold or too cold**

The most troublesome thing for consumers in online fresh food is the freshness problem. Some consumers say that they sometimes experience spoilage. The slow delivery speed is a big problem. A buyer who bought salmon on Tmall said in the evaluation: "It took two days to arrive, and the ice has melted." Some fresh food deteriorated due to insufficient storage and delivery temperature. , and some are over-frozen. Consumer Ms. Xu said that she once bought frozen cabbage in an online store: "The surface is full of ice, and it doesn't have the crispness of fresh vegetables at all.

## **The number of express deliveries with cold chain logistics is not enough**

There are many self-employed individuals selling fresh food on e-commerce platforms, and they rely on third-party logistics companies to deliver their products. But not every express company has a complete cold chain distribution program. Moreover, the temperature requirements required by different fresh products are actually different.

## **The realization of "full cold chain" is not good**

Strictly speaking, the whole cold chain means that the product needs to be transported in a refrigerated truck from the origin to the consumer, and stored in a cold warehouse. This requires the addition of fresh-keeping/refrigeration equipment in any part, but this obviously requires a high cost. According to a research report by the China Refrigeration Association, perishable foods such as fruits and vegetables transported by cold chain logistics should be distributed throughout the cold chain. However, in the delivery journey from the distribution point to the consumer's home, "broken chain" is most likely to occur.

## **Limited delivery scope, users feel useless**

The distribution service radius is short, and regional e-commerce can only serve a certain range of surrounding areas. National platforms need to build large warehouses and more front-end warehouses, distribution points, and rely on community stores under the smart new retail model. It also involves store location and There is an important relationship between store inventory management, store location and customer flow. All these make it impossible for the store to be spread out on a large scale, and the users that can be radiated can only be a part of the people, which will make those users who cannot enjoy the service feel that the service is very useless.

In addition to these problems in distribution, there are many other problems that are equally serious: the fresh food market itself may also be shoddy and lacks a few pounds, and these problems have not been improved in today's online fresh food market.





## 2.2 In big cities, an overly large circle of daily life is very inconvenient for people

With the rapid development of China and the rapid modern urbanization process, the infrastructure construction in cities is gradually improving, which attracts a lot of resident population, so many cities with large geographical scale and large resident population have emerged, such as Shanghai covers an area of 6340.5 square kilometers and has a resident population of 24.1833 million. At the same time, the total urban area of Beijing has even reached an astonishing 16,410 square kilometers, with a resident population of 21.536 million.

It is true that high urbanization makes people's lives more convenient, and urban life enables people to enjoy the convenience facilities that are not available in township life. But at the same time, urbanization has also brought a lot of inconvenience to people's life (especially some big cities). Overly large cities make the daily life of permanent residents a lot of inconvenience. For example, the price of daily materials is high, and the commute time is very long due to geographical reasons. At the same time, the supporting facilities in some places are not perfect or there are differences in the quality of supporting facilities, resulting in the phenomenon that many people use the supporting facilities in other areas. This has led to a situation in big cities where everyone rushes to a well-known hospital for treatment, and this hospital even has to queue for a day to get a number, which also leads to the problem of increasing people's living costs.

Then there is the issue of daily necessities. Taking Shanghai as an example, many areas outside the outer ring are relatively newly developed sectors. In fact, there is no good supporting infrastructure in such sectors. For example, a market such as a vegetable market covers a large area, requires a large initial investment and Infrastructural complexes with low returns are not adequately equipped near each community. This situation will lead to the fact that although the daily shopping of people living in the core area of the city is relatively convenient. However, the basic living circles of people living in non-core areas of the city are relatively large. Some residents living in such areas actually need to rely on online shopping to a large extent, and the city brings them little convenience. At the same time, the people living in the new urban area are mainly young people. Most of them need to spend a lot of time on daily commuting. This situation requires them to buy daily supplies as convenient as possible.



## 2.3 The covid-19 epidemic has had a profound impact on people's daily shopping and life

The epidemic, which started at the end of 2019, has had a great impact on our daily life, and even completely changed the way of life of many people. Although it seems that the new crown epidemic has lasted for more than two years, and people seem to have become accustomed to the epidemic. It feels as if the impact of the epidemic on people now is that they need to wear masks when they go out every day, and at the same time, they need to minimize the possibility of face-to-face contact with others. But in fact, the impact of the epidemic on every country, every family, and even every individual is huge and subtle. The most direct impact of the epidemic is that many countries have cut off contact with other countries, and the concept of borders has been continuously strengthened between countries and regions. Before the epidemic happened, thanks to the increasingly convenient transportation, people had more opportunities to "travel when they want to travel". The sense of borders between countries is constantly being weakened, and the whole world is developing in the direction of a "global village". At the same time, people are eagerly looking forward to going to other countries and regions to experience the local customs. However, the arrival of the epidemic has suddenly interrupted the process of the world's "borderless", because different countries have different attitudes towards epidemic prevention and control, which has led many countries to take certain isolation measures to prevent the epidemic from aggravating again. Social distancing between people is also constantly emphasized. All these factors have continuously widened the sense of distance between people, and the sense of tearing between people has also been continuously enhanced, which has had a subtle impact on each individual over time.

In a country like China where the government has strong control over the people, the epidemic was brought under control relatively quickly. The entire epidemic era has also been cut into different stages. At the same time, in different stages of the epidemic, the impact of the epidemic on people is not the same. In the next article, I will analyze the impact of the epidemic on people's daily work, study, life and other aspects in these different stages.

## Early stage of the epidemic

In the early stage of the epidemic, everyone's understanding of the epidemic was not that mature, and everyone just knew that this was a highly contagious and serious "flu". Moreover, in the early stage of the epidemic, there was no effective treatment for the epidemic, resulting in a high mortality rate. This caused people to be very afraid of the epidemic at the beginning, and they were very afraid that they would have a little connection with this terrible "flu".

At the same time, the government has also adopted strong measures to cut off any possible ways of spreading the virus at this stage. For example, Wuhan locked down the entire city, everyone needs to spend the Spring Festival locally, and all people who may be infected with the new coronavirus are uniformly quarantined, etc. At this stage, the impact of the epidemic on people's daily life is huge, and many regions have directly entered a state of suspension of work, school, and production.

In quarantine, people are almost completely cut off from direct contact with the outside world. People who are not quarantined are also staying out of the house as much as possible, and reducing all social interactions that may be reduced. The sense of distance between people has been expanded to an unprecedented degree. In terms of the supply of daily materials, everyone has hoarded a lot of daily materials intentionally or unintentionally, and even daily materials in many areas have been looted. In terms of daily work and study, due to the sudden arrival of the epidemic, many schools have directly changed the mode of teaching in the classroom to the mode of offline teaching. In the early stage of the epidemic, because the epidemic occurred suddenly and aggressively, the whole society did not have a specific defense and resistance mechanism against the epidemic, so people's daily life entered a state of being strongly affected by the epidemic. The direct impact on daily life, study and work is huge, and it also lays the seeds for the far-reaching impact of the epidemic on people's lives in the future.

## The middle and late stages of the epidemic

At the end of 2020, the Chinese people have gone through a whole year of fighting against the epidemic. In the past year, as the government conducted a large-scale or even full-scale screening of the areas where the epidemic existed, and centralized control and prevention of people from other countries and maps coming to China, there are actually no centralized outbreaks of many epidemics in mainland China. .

At the same time, with the joint efforts of the world, many countries have developed vaccines for the new coronavirus, and China has also organized nationwide vaccinations immediately after the vaccines have been developed, which also means that the epidemic in China has officially entered a stable period. (mid-late period). At this stage, except for a few sporadic infections, the whole of China is basically in a state of zero new cases. At the same time, China has established a complete green code system and a big data query system for travel itineraries. Such a complete system makes people in China in a relatively safe area. In line with this, people's vigilance against the new crown gradually decreased to a lower level. The actual impact of the new crown on people has indeed been reduced to the point that everyone only needs to wear a mask to travel and avoid going to the area where the new crown broke out. At this stage, the actual impact on people's life, study and work has been minimized. But the psychological impact of Covid-19 has deepened. Specifically: To a certain extent, people have a strong sense of distance from people in medium and high risk areas (there may be several infections in this city/region, and some areas may be controlled by the government), and some people even feel Such people have negative emotions such as discrimination; similarly, as everyone's awareness of social distancing has been further improved nationwide, everyone is more inclined to maintain a relatively safe social distance from others at all times. It also makes people more and more inclined to do online shopping instead of offline shopping; in addition, everyone's awareness of protective disinfection facilities has been raised to a new height in a short period of time, and everyone's enthusiasm for purchasing disinfection items is unprecedentedly high. This has led to the birth of some deformed shopping concepts: items that are not disinfected are unhealthy and so on. During the stable period of the epidemic, the actual impact of the epidemic itself on people has actually reached a low level. However, due to the impact of the epidemic on concepts, people's shopping habits in daily life have changed a lot, which has led to higher demands on service providers in daily life, such as contactless delivery, green and green access to and from public places. code and so on.

### **Epidemic counterattack period**

Everyone originally thought that after the epidemic reached a stable period, there would be no other major changes, but the sudden emergence of various variants of the new coronavirus (Omicron, etc.) caused China to experience many large and small epidemic countermeasures.

Different from the previous sporadic and scattered new cases, the new virus variant has a relatively concentrated outbreak in one or more regions of China. In the face of this situation with higher difficulty in tracing and troubleshooting, everyone's chord about the new crown has become tense again. And because such outbreaks involve many regional cities, many people's cross-regional activities are strongly restricted, and almost all travel in daily life has been canceled. At the same time, due to the local blockade policy, the daily life of people in those areas has also been greatly affected, and daily shopping/fresh food purchases have shifted from offline to online. Students have changed from attending classes at school to taking online classes at home. People who work offline also have to accept the form of online work. People's daily life is affected by all dimensions.

The impact of the epidemic on people is profound and far-reaching. In the severe stage of the epidemic, everyone's work and life are actually affected more. During the relatively stable stage of the epidemic, everyone was more psychologically affected. Such an all-round influence has made a great change in people's daily life habits, consumption psychology and so on. People are more and more inclined to use online shopping to solve all daily needs, and people also put forward higher requirements for the safety of online shopping.



003

# Background Research





## 3.1 Trends

First and foremost, I will concentrate on trend research during the background research stage. We must begin with the totality and grasp the trend of the complete environment from a global perspective in the first half of the background analysis. The double diamond model's initial diverging component is here. The benefit of doing so is that, on the one hand, we may summarize and analyze the first issues into current societal trends, and then use those trends as the basis for further analysis and study. On the other hand, we can take a step back and examine the situation from a different angle. Examine the initial challenges to see if there are any additional opportunities. At this point, I'm focusing on four megatrends:

- The concept of 15-minute urban life circle is becoming popular in China.
- More convenient, faster and safer shopping has become the new shopping trend.
- Residents' shopping habits have changed from offline shopping to online shopping, and fresh food e-commerce has become a trend.
- The fresh food industry has flourished in the past few years, and there is a trend of getting better.

### 3.1.1 The concept of 15-minute urban life circle is becoming popular in China

In recent years, the 15-minute community life circle has become a hot spot in domestic community planning and construction work. Many cities have successively put forward the goal of building a 15-minute community life circle in their overall urban planning, community planning or public service facility standards, and have implemented them in specific planning and construction work.

With the improvement of economic level, people's voice for a higher quality of life is getting louder and louder, and cities should upgrade supporting facilities to meet the high-quality life of most people. More and more people refuse to endure wasting a lot of time on daily activities such as commuting and grocery shopping, and misplaced or missing urban living facilities make people waste a lot of time.

At the same time, in the whole of China, the problem of aging society is very serious. If it is a super-large city like Shanghai, the problem of aging is even more serious. At the same time, another problem brought about by the too large urban activity circle is that even doing a simple task requires a lot of energy and time for the elderly who are slow to move, which is equivalent to restricting the activity space of the elderly group. They don't want to go out at all.

Hospitals, schools, and even community activity centers and other community facilities are more or less unfair in resource allocation, which leads to a considerable number of people who need to spend a long time on their way to these community facilities. This situation amounts to a disguised expansion of their circle of daily life.

Such problems concern the hearts of everyone living in the city, as well as the hearts of the city's planners and governors. They found that the concept of a 15-minute urban life circle can alleviate these problems, so the government started Promote the implementation and development of the 15-minute urban life circle in China from top to bottom. More and more people have heard and understood what the 15-minute urban life circle is and what the benefits are. At the same time, more and more people are joining the queue to build the 15-minute urban life circle in the city. At the same time, due to



the sudden outbreak of the new crown epidemic in 2019, more and more people have to shrink their own daily life circles. This allows these people to understand what the small city life circles are like from another perspective, thus deepening people's Awareness of the efficiency and convenience of a small life circle.

### **3.1.2 More convenient, faster and safer shopping has become the new shopping trend.**

Since 2012, China's economy has entered a new normal, and although the total volume is expected to slow down in the next five years, it will still maintain a growth trend. According to the first-quarter macroeconomic data released on April 17, 2017, the domestic GDP increased by 6.9% year-on-year, the highest since September 2015. The added value of the industrial enterprises above designated size increased by 6.8% year-on-year in real terms, and the growth rate was 1.0 percentage points higher than that of the same period of the previous year. The total retail sales of consumer goods in the first quarter was 8,582.3 billion yuan, a year-on-year increase of 10.0%. Although the growth rate dropped by 0.4 percentage points from the previous year, it still maintained a high growth rate. The long-term rapid growth trend has made the consumption desire of Chinese consumers also show a trend of rapid growth. More and more consumers consume according to their favorite consumption patterns. At the same time, the rapid development of the Internet economy in China has made many Consumers began to use the Internet to consume. Although everyone buys different types of things and the reasons for consumption are also different, since the rise of Internet shopping, "good, fast and cheap" has become possible, which leads to everyone's requirements for shopping experience pointing to the same Direction: The shopping experience should be more convenient and the shopping process should be faster. At the same time, the sudden outbreak of the epidemic has made everyone pay more attention to social distancing, which has also led to people's demands for a safer shopping environment.

With the rapid popularity of the Internet economy, various "Internet + industries" have also emerged rapidly to meet people's shopping needs from all dimensions. Taobao satisfies everyone's basic shopping desires, and Meituan satisfies everyone's desire to not cook or go out to eat... The emergence of these Internet platforms has greatly facilitated people's lives. People realize

that shopping is a matter of So simple, all we need to do as consumers is to move our fingers on our mobile phones at home. Until now, various Internet companies are still introducing more and more convenient functions, and it is enough to foresee that shopping will become more convenient in the near future.

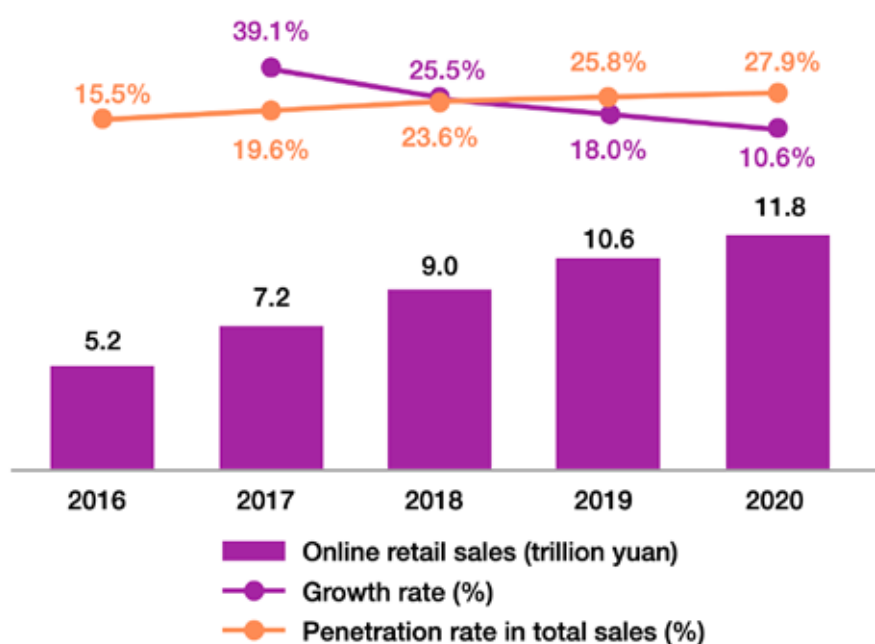
Fast online shopping process has also been researched and put into use in recent years to benefit the public. In most cases, the initial shopping process in China is cash shopping plus a small number of people choose credit card payment (offline shopping), and online shopping has to go through very cumbersome payment steps. But after the emergence of a series of quick payment apps, the situation has undergone tremendous changes. Now almost all Chinese people have begun to pay with Alipay and WeChat Pay, and the payment for online shopping has also changed from the previous cumbersome steps to a simple click on the phone. In addition to becoming faster and more convenient in operation, the express delivery industry has also experienced considerable development. From the earliest postal parcels that took a week to be delivered to the present, they can be delivered the next day or the same day. You can clearly see The speed has been greatly improved, and even JD.com has placed many front-end warehouses in different parts of the city according to users' potential shopping habits, which greatly shortens the time from ordering an item to getting it. And these existing shortcuts make users aware of the necessity of shortcuts, which leads users to put forward further requirements for the speediness of online shopping.

At the same time, the new crown epidemic has made people's safety awareness unprecedentedly high, so people now pay more attention to safe shopping than before. The COVID-19 pandemic that crept in in late 2019 made people reconsider the issue of social distancing. The convenience and speed of life before the arrival of the epidemic largely depended on great human resources: the core of activities such as packing express, sorting express, and delivering express is essentially that people play the role of transmitters. During the epidemic stage in China, as little contact as possible or maintaining a safe social distance is the top priority of everything, so it is foreseeable that even for a long time in the future, safe shopping will definitely be a priority for people.

### 3.1.3 Residents' shopping habits have changed from offline shopping to online shopping, and fresh food e-commerce has become a trend.

In recent years, the rapid development of China's economic level and the rapid development of the Internet have brought more possibilities to everyone in terms of shopping methods. At the end of 2020, the number of Chinese netizens reached 990 million, and the Internet penetration rate reached 70.4%. Such a large group of netizens constitutes China's booming Internet shopping market. After contacting Internet shopping, everyone is quickly convinced by such a convenient and fast way of shopping. When the first thought in everyone's mind became "go to Taobao and search for it". More and more abundant and convenient online shopping platforms have changed everyone's shopping habits. At the same time, China has become one of the largest Internet trading centers in the world.

**China's online retail sales and growth rate from 2016 to 2020**



(Data source: National Bureau of Statistics of China)

According to the National Bureau of Statistics of China, from 2016 to 2020, the national e-commerce transaction volume increased from 26.10 trillion yuan to 37.21 trillion yuan, with an average annual growth rate of 9.3%.

The number of online shoppers in China has reached 782 million, making it the world's largest and most dynamic online retail market for many years. From 2016 to 2020, the national online retail sales increased from 5.16 trillion yuan to 11.76 trillion yuan, with an average annual growth rate of 22.9%. Since the outbreak of the new crown pneumonia epidemic, the online retail market has maintained a steady growth momentum. In 2020, the national online retail sales increased by 10.9% year-on-year, and the online retail sales of physical goods increased by 14.8% year-on-year, accounting for 24.9% of the total retail sales of consumer goods, an increase over the previous year: 4.2 percentage points, becoming the stabilizer of the consumer market.

**E-commerce growth data** (Data source: National Bureau of Statistics of China)

**E-commerce transaction size:**

In 2018, the scale of China's e-commerce transactions was 32.55 trillion yuan, a year-on-year increase of 13.5%; accounting for 36.15% of China's 2018 GDP of 90.03 trillion yuan. Among them, the transaction volume of B2B e-commerce was 22.5 trillion yuan, the transaction volume of retail e-commerce was 8.56 trillion yuan, and the transaction volume of life service e-commerce was 1.49 trillion yuan.

**Netizen size:**

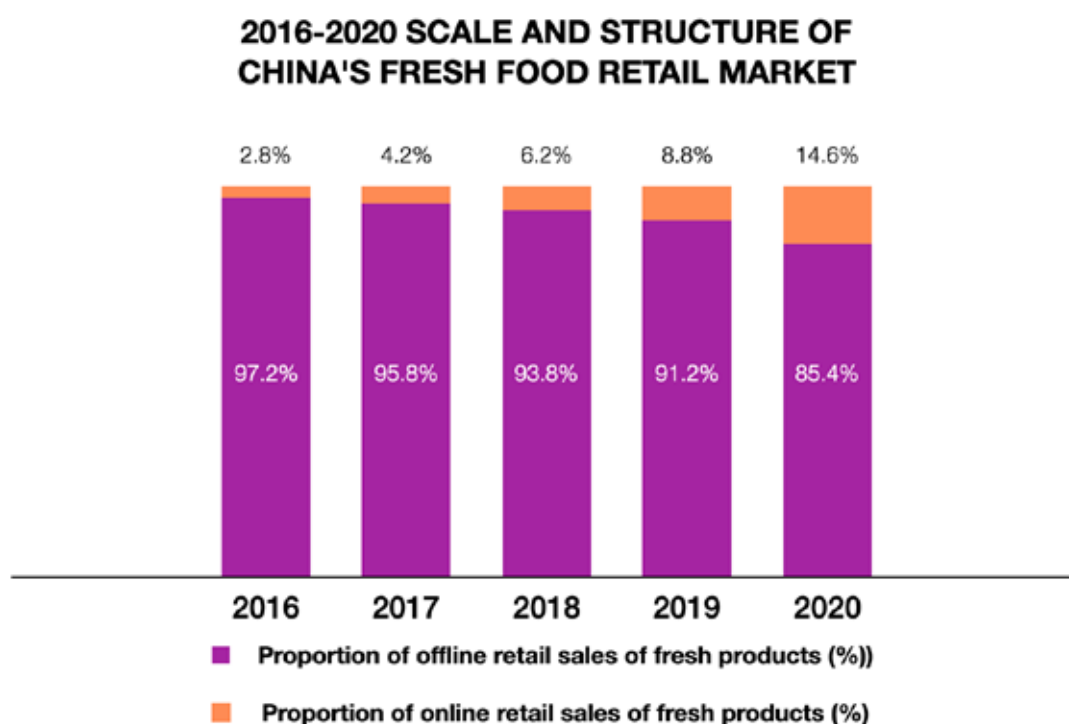
As of June 2019, the number of netizens in my country reached 854 million, the Internet penetration rate reached 61.2%, the number of mobile netizens in my country reached 847 million, and the proportion of netizens using mobile phones to access the Internet reached 99.1%, an increase of 0.5 percentage points from the end of 2018.

**Online shopping users:**

As of June 2019, the number of online shopping users in my country reached 639 million, accounting for 74.8% of the total netizens.

## The proportion of online fresh shopping has gradually increased

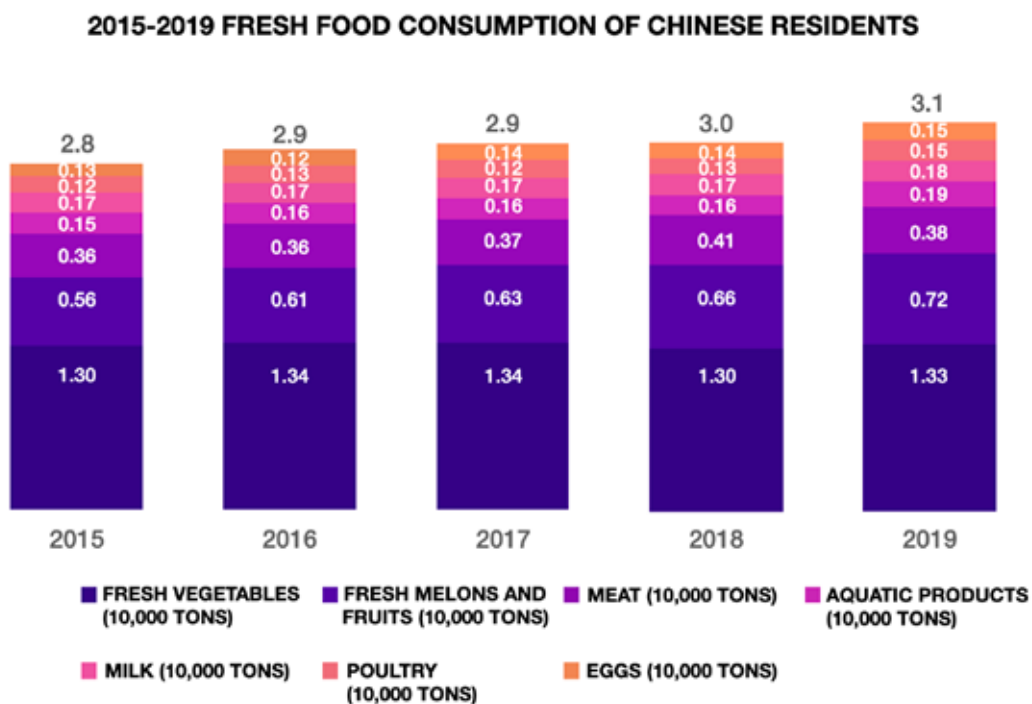
At the same time, due to the impact of the new crown epidemic, China's fresh food e-commerce market developed rapidly in 2020. The scale of the fresh food e-commerce industry reached 458.49 billion yuan, an increase of 64.0% compared with 2019. From the perspective of fresh food retail channels, offline retail channels such as supermarkets and vegetable markets are the main fresh food retail channels. Although the online penetration rate of fresh food in China is still low, the growth rate is rapid. The emergence of the new crown epidemic in 2020 has accelerated the online penetration of fresh food. In 2020, the proportion of online fresh food retail in China will reach 14.6%. With the gradual development of consumers' online shopping habits and the increasing emphasis on online fresh food retail in the fresh food retail market, the online fresh food penetration rate will gradually increase. For the e-commerce fresh food industry, this is a challenge and a rare opportunity.



(Data source: <China Fresh Produce E-Commerce Industry Research Report>)

### 3.1.4 The fresh food industry has flourished in the past few years, and there is a trend of getting better.

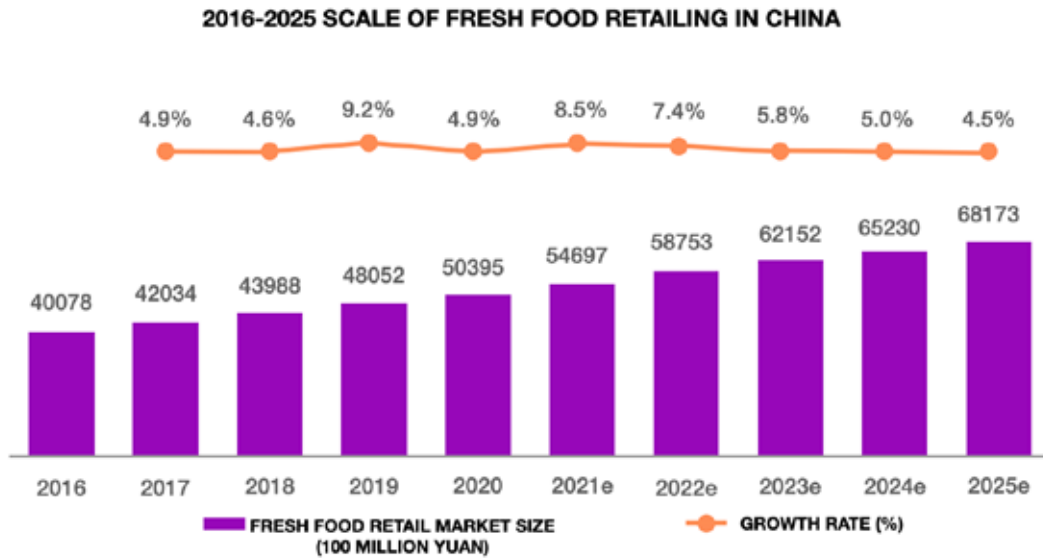
In China, due to the huge population itself, coupled with the good economic development in recent years, China has a super-large consumer group. At the same time, due to the high requirements of the Chinese nation for the richness of dishes, the demand for fresh food has always been huge. According to data from the National Bureau of Statistics, the consumption of fresh food by Chinese residents in 2019 reached an astonishing 3.1 trillion tons, and the gradual development of data in recent years shows that the consumption of fresh food is showing a steady increase every year. It also provides a great help to the development of the fresh food industry.



(Data source: National Bureau of Statistics of China)

As there is a huge demand for fresh food in China, and fresh food is also a must for people's livelihood consumption, the development of China's fresh food retail industry has also made a qualitative leap in recent years. According to data from the National Bureau of Statistics, the market size of China's fresh food retail market in 2020 will exceed 5 trillion yuan. And while showing steady growth in the past few years, it is expected that the fresh retail market

will continue to grow in the future. According to the forecast of iResearch's "China E-commerce Industry Research Report", by 2025, the scale of China's fresh food retail market will reach 6.8 trillion yuan.



(Data source: <China Fresh Produce E-Commerce Industry Research Report>)



## 3.2 Desk Research

After completing the trend research, we have a certain grasp of the trend of the environment. What needs to be done at this stage is to conduct deeper desktop research from different levels such as society/user/policy. The basic research methods that will be used at this stage are: literature research, policy and regulation research, report research and other secondary data research. This stage is also the divergent part of the double-diamond model. Its function is to gain a deeper understanding of possible future research topics while divergent, find out the possible original problems and opportunities for the research topic, and at the same time find out the possible research topics. various influencing factors. At this stage, I also start from four levels:

- The impact of the new crown epidemic on the consumer market and consumer psychology.
- Original Problems in China's Fresh Market.
- Factors affecting consumers' willingness to buy fresh agricultural products online.
- The impact of the 15-minute urban life circle on all aspects of the city.

### 3.2.1 The impact of the new crown epidemic on the consumer market and consumer psychology

The sudden outbreak of the new crown epidemic has caused people to enter another state of life unexpectedly. In this state, the market has been seriously affected, the supply and demand relationship that was originally tending to be balanced has been broken, and both the supply side and the demand side have undergone great changes.

#### 1. The epidemic has had a huge impact on the supply side of consumption.

The abrupt onset of the new crown epidemic has thrown individuals into an unanticipated new stage of existence. The traditional consumer goods industry was impacted. Consumers reduced non-essential activities such as shopping, gatherings, and gatherings throughout the outbreak, and consumption of non-essential commodities and services such as catering, lodging, and tourism was dramatically reduced. On the one hand, the epidemic has had a substantial impact on commodities consumption. Between January and February 2020, total retail sales of consumer products totalled 5,213 billion yuan, down 20.5 per cent in nominal terms year on year. Retail sales of gold and silver jewellery, autos, furniture, apparel, footwear, and headwear, knitted fabrics, domestic appliances and audio-visual equipment, and building and décor materials all fell by 30% or more year on year. However, traditional service consumption has slowed significantly. The catering and tourism industries have seen major income declines. Between January and February 2020, catering revenue was 419.4 billion yuan, down 43.1 per cent year on year; during the Spring Festival in 2019, the total number of tourists received nationally was 415 million, and tourism revenue was 513.9 billion yuan, up 513.9 billion yuan. The rate is greater than 7%, but both the number of tourists and revenue in the first quarter of 2020 are declining year on year.

New company concepts and business structures are emerging at a breakneck pace. While the new crown pneumonia pandemic is affecting traditional service consumption such as catering, accommodation, and travel, online consumption has grown at a breakneck pace, with online offices, online medical care, online entertainment, and online education all growing in popularity. New digital consumption scenarios. In reaction to the epidemic's negative impact, retailers and caterers expedited the development of online

businesses and contactless services like Internet sales and food delivery. According to Meituan's "Contactless Delivery Report," orders placed via "contactless delivery" accounted for more than 80% of total order volume from January 26 to February 8, 2020. Residents adopted the online "contactless" medical treatment concept during the outbreak. According to data from Ping An Good Doctor, the site received 1.11 billion visitors during the epidemic, the number of newly registered users surged tenfold, and the average daily number of visits to the platform was nine times usual. Throughout the epidemic, "suspended classes and non-stop learning" produced a strong demand for online education services, and consumer products like as standardized and customized online education courses, online live teaching systems, and teaching training quickly gained popularity. According to data from Tencent Classroom, the platform's online users rose over 128 times during the 2020 Spring Festival. Throughout the epidemic, inertial demand for cultural and entertainment services went online, and offline box office, concert, and other consumption expenditures shifted to online digital material, raising the volume of online entertainment service consumption.

The supply chain's stability is being put to the test. Apart from the service industry, the epidemic's spread has posed issues for the manufacturing supply chain's stability. Domestically, as a result of the disparate pace of resuming production and work in various locations, the resumption of work of upstream and downstream enterprises in the supply chain is not synchronized, resulting in a series of problems such as production suspension, inefficient logistics, and slow product sales. Internationally, the market demand and global supply chain issue created by the overseas epidemic has had a detrimental effect on my country's manufacturing and production businesses. According to data from California-based big data company Resilinc, the epidemic in China affected over 36,000 component types, over 9,000 factories, and over 1,500 unique primary/secondary suppliers at the start of March 2020; while South Korea, Japan, and Italy were also affected, each with thousands of component types, factories, and unique tier 1/2 suppliers. The supply chain shock has spread well beyond China, manifesting in a variety of countries and areas throughout Asia and Europe.

Consumer prices are increasing. In the short and medium-term, demand for everyday essentials such as vegetables has soared, but preventative purchases of anti-epidemic items such as masks and alcohol have climbed significantly. Simultaneously, there has been an insufficient supply and a halt of production

in the breeding, planting, and manufacturing industries, increasing the prices of daily necessities and anti-epidemic materials. According to the National Bureau of Statistics, the national consumer price index increased by 5.4 per cent year on year in January 2020, with food prices increasing by 20.6 per cent, led by pork and fresh vegetables; in February, the national consumer price index increased by 5.2 per cent year on year and 0.8 per cent month on month; and the CPI increased by 4.3 per cent year on year and fell 1.2 per cent month on month in March. These issues also occur in high-tech and consumer electronics, as well as in automotive, industrial, and heavy machinery, semiconductors, and medical devices. Simultaneously, the severe swings in international commodity prices such as oil and cotton would affect domestic prices.

## **2. The epidemic has had a huge impact on the demand side of consumption.**

The general people are becoming increasingly conscious of safety and health issues. Residents are more concerned about their safety and health as a result of the outbreak. Consumers are not just more interested in epidemic prevention products, but they are also more concerned about public health. Anti-epidemic materials such as masks and disinfectants have become critical in the short term. JD.com alone sold 126 million masks, 310,000 disinfection bottles, and 1 million bottles of hand sanitiser from January 19 to 22, 2020. People are more concerned about the safety of their surroundings, as well as the ventilation and disinfection of residential and retail locations. Consumer demand for safe and healthy goods and services will continue to rise in the long run.

People's online behaviours have matured significantly. Consumers immediately turned from offline to online life, business, and pleasure as a result of the epidemic's travel constraints, forming online habits and increasing stickiness. On the one hand, the range of online consumption objects has grown over time, and online purchasing objects have expanded to include non-standardized and low-frequency commodities like fresh food and pharmaceuticals. During the Spring Festival, JD Daojia's overall platform sales increased by 470 per cent compared to the same period last year; Hema's average daily vegetable supply was 6 times normal, Dingdong's average daily grocery shopping orders increased by 3 to 4 times, and Meituan's grocery shopping users increased month over month. Meituan's takeaway chronic prescription medicine sales climbed by 237 per cent on average, a rise of 200

per cent. Digital culture and leisure services are in great demand, video and game users are on the rise, online education and office work are becoming more common, and online teaching and video conferencing have become the new normal in home life. The online consumer group, on the other hand, has grown significantly, with older citizens and school-aged youngsters joining the army of online shopping, learning, and amusement.

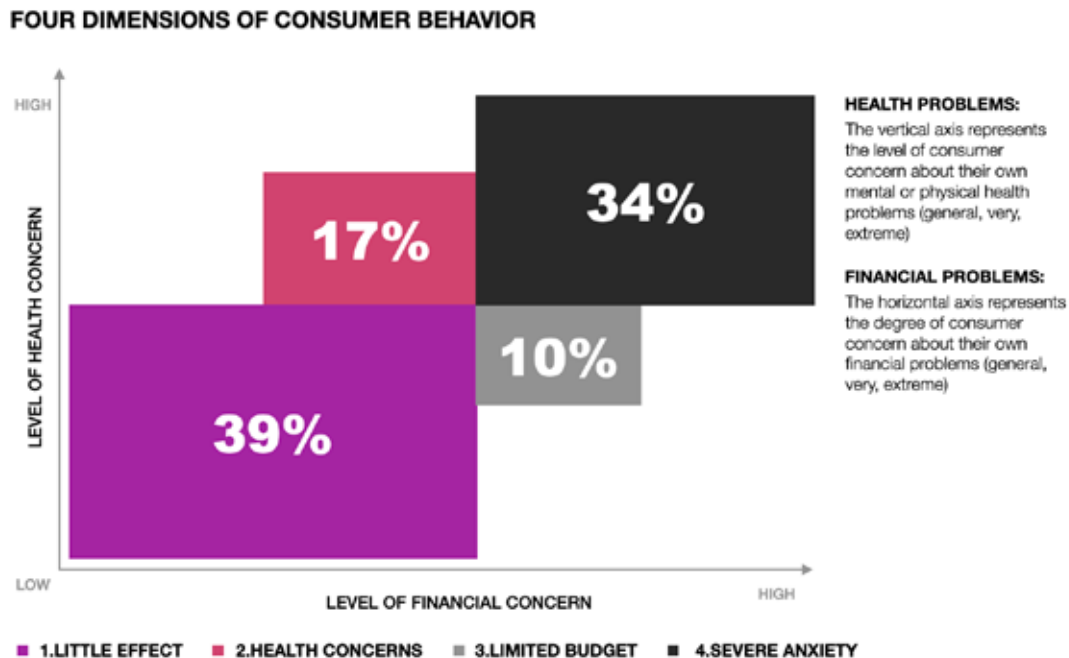
Spiritual and cultural needs are becoming more pressing. Although consumers' material wants for food, shelter, usage, and transportation were limited during the epidemic, their spiritual and cultural needs were not affected and are much greater than before. On the one hand, when consumers have met their basic survival and safety demands, the increased time spent at home has caused them to pay greater attention to epidemic-related information reports, and information consumption has become a daily necessity for the general population. As a result, the level of demand rises. According to a survey report released by NetEase Positioning, during the epidemic, in addition to a significant increase in residents' time investment in household affairs, information acquisition and investment, as well as financial management, have become the two activities that have increased time investment the most. On the other hand, as people's ideological activities have become more independent, selective, variable, and diverse, so has the diversity of information consuming material and channels, including television, websites, Weibo, WeChat public accounts, and WeChat private accounts. Different types of information, such as groups, circles of friends, and small video APPs, as well as different types of content, such as business finance, entertainment and variety shows, health care, food and cookery, technology, and parenting, have a growing number of spiritual and cultural demands.

Some groups' purchasing power has dwindled. The epidemic has lowered the pay of several employees in the life service business and migratory labourers, reducing their purchasing power. Wholesale and retail, accommodation and catering have become the key routes for employment in the tertiary industry in cities as the amount of work in my country's service industry continues to rise. During the outbreak, some businesses struggled to stay afloat, with capital flow interruptions and withdrawals. Employees' income and spending power have decreased as a result of market conditions. According to a poll conducted by the China Hotel Association on the catering industry, many catering companies have chosen to discontinue operations and stop losses in the face of a dramatic decline in consumer sources and various stringent regulations imposed by the pandemic. According to the survey, 19% of employers plan to cut workers, while 33% and 33% have no plans to cut staff.

Ordinary employees are only paid the basic salary and the region's minimum standard salary in 24 per cent of the organizations surveyed. After the Spring Festival vacation, the movement of individuals in rural areas has been restricted due to measures such as road closures and village closures for epidemic control, and migrant workers' income has been affected differently in different industries, affecting their buying power.

These data show that the epidemic has had a huge impact on the supply and demand sides of the consumer market, but as designers, we also need to pay attention to the impact of the epidemic on people's psychology. According to research by Consumer Behavior (<Anxiety in COVID-19 creates new consumer behaviors>), half of the consumers worldwide say their spending habits have changed permanently due to the pandemic.

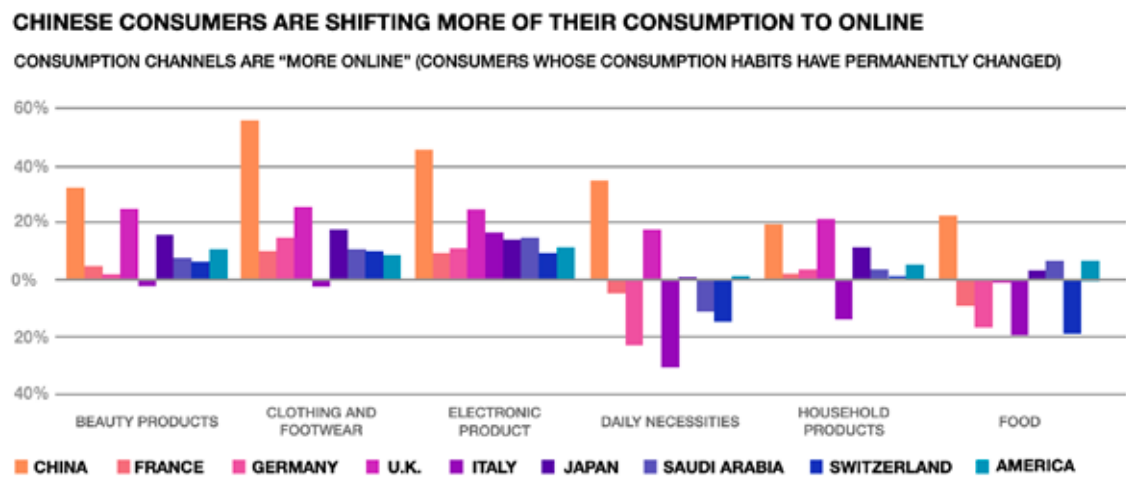
On the one hand, only 39% of the people feel that the epidemic has little impact on them, and the rest of the people feel that the epidemic has affected them more or less. 34% of the surveyed people feel that their health and finances have been affected seriously, so they are in severe anxiety.



(Data source: <Anxiety in COVID-19 creates new consumer behaviors>)

In the report, there is another interesting point. The consumption habits of Chinese consumers have been changed the most and most thoroughly by the new crown epidemic.

Because the e-commerce industry has developed well in China, China attaches great importance to the epidemic. Thus, under the influence of the epidemic, in almost all categories, the consumption habits of Chinese consumers have become more inclined to online purchases. This is an opportunity and also a challenge for China to build an "Internet +" society in the future.



(Data source: <Anxiety in COVID-19 creates new consumer behaviors>)

## 3.2.2 Original Problems in China's Fresh Market.

### The characteristics of agricultural products

The biological characteristics of agricultural products, especially fresh agricultural products, determine that they are fundamentally different from industrial products in terms of logistics.

Huang Zuhui suggests that these biological characteristics are reflected in three aspects: firstly, the perishability and perishability of vegetables and fruits due to the continuation of life activities after harvesting. Secondly, the low value and large size of the product. Thirdly, the initial variation in shape, size and quality of the product. These three biological characteristics lead to a certain degree of uncontrollability in the production, transport, and preservation of fresh produce and the process of reaching the consumer. In this case, cold chain logistics services are required, specifically for fresh produce.

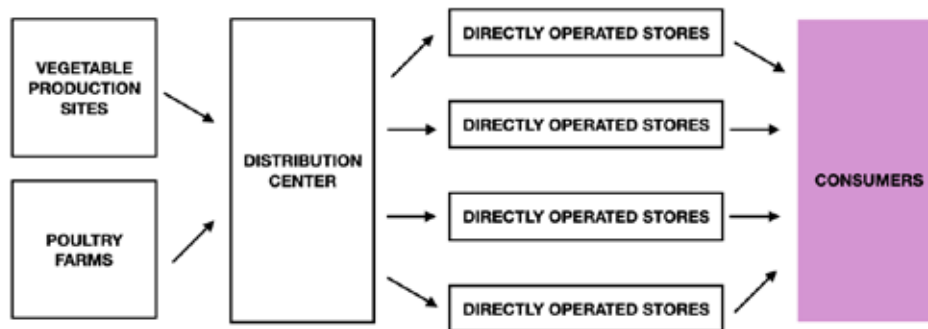
The cold chain logistics facilities and equipment are divided into cold chain logistics software and cold chain logistics hardware facilities. Among them, the cold chain logistics hardware facilities include cold chain transportation equipment (such as refrigerated trucks, refrigerated ships, refrigerated railway sets, etc.), cold chain storage equipment (such as cold storage, refrigerated containers, etc.), cold chain packaging equipment (such as insulation boxes, constant temperature boxes, ice bags, etc.), cold chain sales equipment (refrigerated display cabinets, frozen display cabinets, etc.) and other four categories. These four types of equipment make up the entire cold chain logistics in the first, middle and last three stages, while they are combined in different ways to become a variety of other chains from the production end to the consumption end.

### Three types of cold chain logistics

In China, cold chain logistics can be broadly divided into three types.



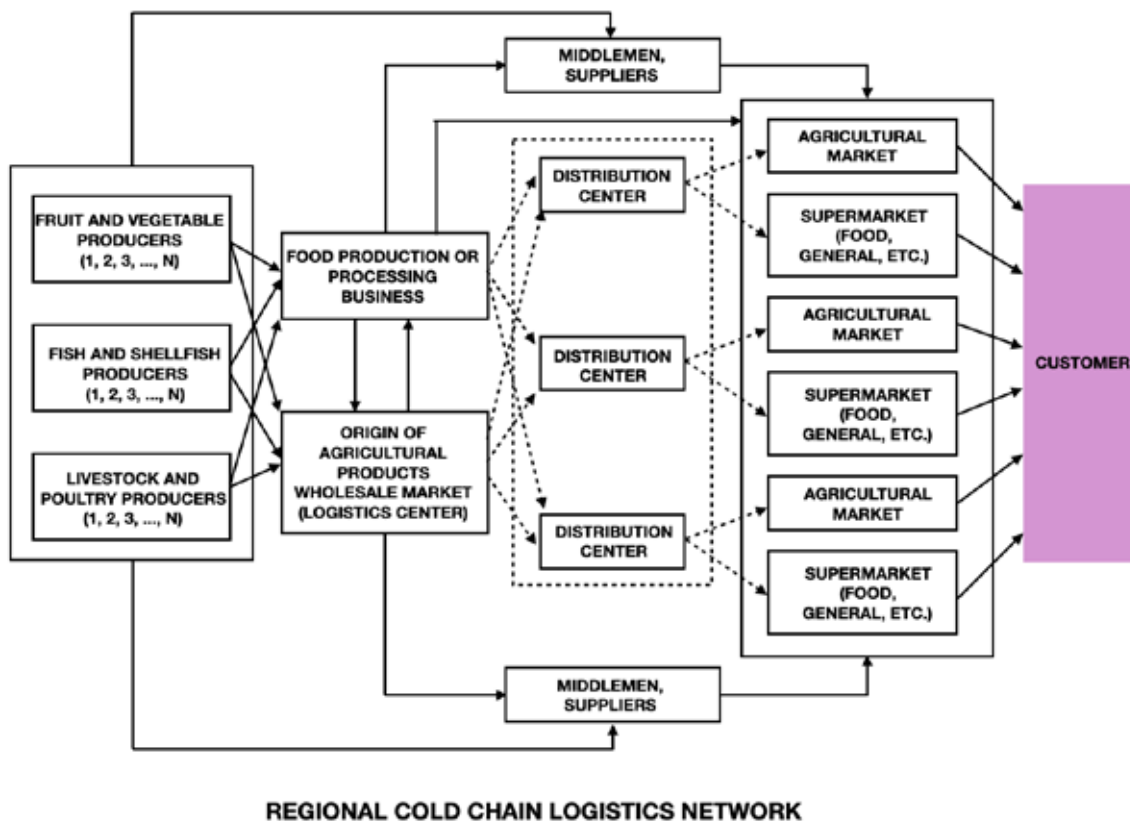
The first is the network model of a single economy, i.e. the integrated production, supply and sales model or the direct sales model. This type of cold chain logistics is not complicated, as long as it links the origin and the consumer side or the sales shops. However, this model is only applicable to some large-scale food production bases (vegetable production bases, raw poultry production bases, etc.) and does not apply to small providers of production materials.



**Integrated production, supply and marketing cold chain transport network**

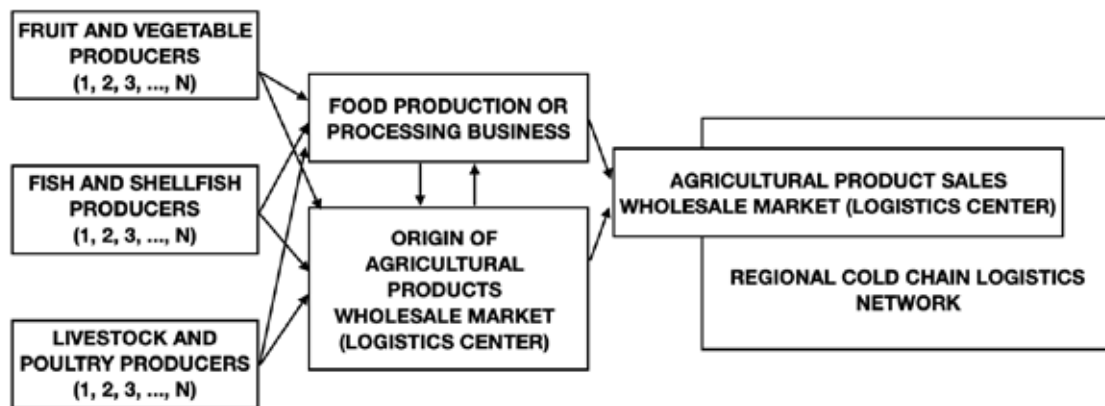
(Data source: <Logistics network study for fresh food>)

The second way is the intra-regional network model, i.e. the products in the cold chain logistics are mainly agricultural products (eggs and dairy products, fruits and some primary processed products), which are highly interchangeable with each other, so to a certain extent, they can be self-sufficient in the region. However, due to the problems of quality and freshness as well as the high cost of distribution, the distribution network of cold chain logistics has the problem of missing distribution centres, which has led to the fact that the connection between the wholesale market and the small B-side of the distribution network is not exceptionally smooth.



(Data source: <Logistics network study for fresh food>)

The third way is the cross-regional network model. The most significant difference between this model and those mentioned above intra-regional cold chain logistics network model is that this model covers a much wider area. Due to geographical and climatic reasons, there is a big difference between fresh products from the north and the south, and even from the country and abroad, and the need to enjoy fresh products from other regions requires a cross-regional network model. Due to the broader range and greater flow, it is more difficult to control the freshness, resulting in such a cold chain logistics network being more challenging to maintain and more costly.



#### **CROSS-REGIONAL COLD CHAIN LOGISTICS GRID**

(Data source: <Logistics network study for fresh food>)

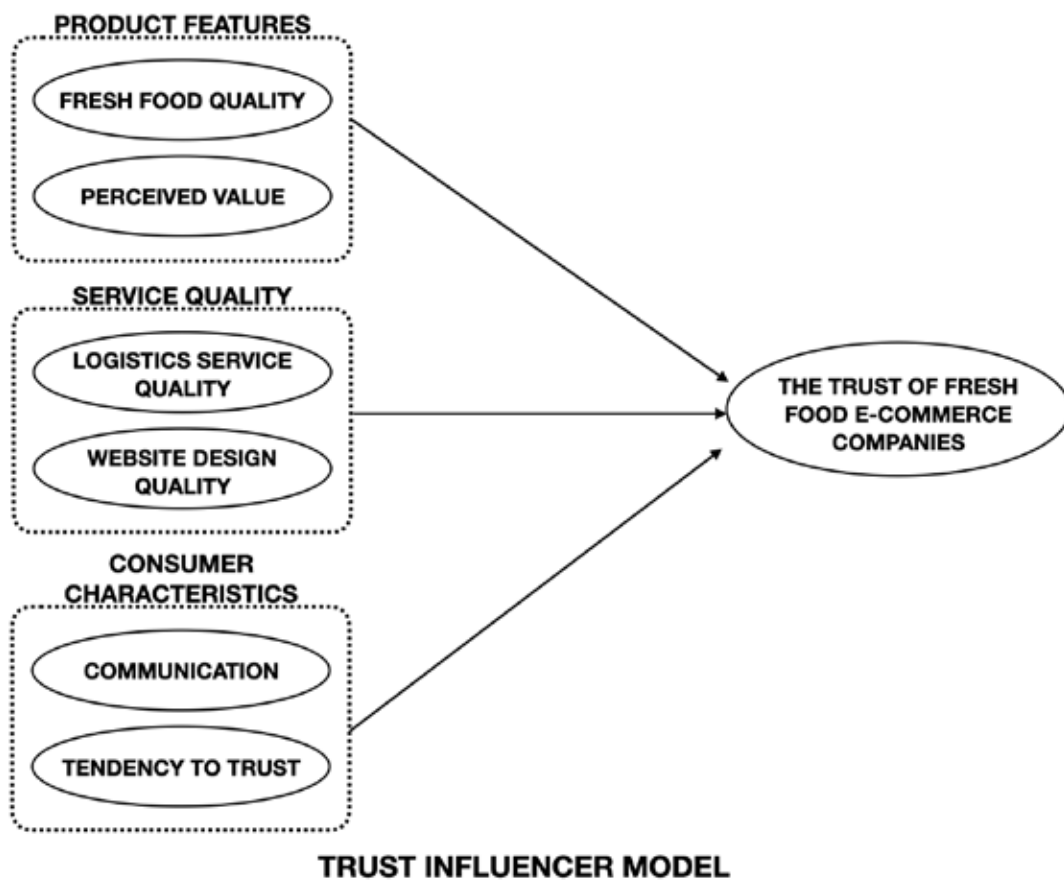
Due to the unique nature of the original properties of fresh agricultural products, there are many problems with the cold chain logistics system that have not been solved so far. Although in recent years, along with the rapid development of the high-speed railway transport industry, air transport industry, etc., the cold-chain transport system has been gradually improved, the above problems have been further solved. But on the whole, it seems that the chaos in the domestic fresh produce market is inseparable from the current fresh produce cold chain transport system.

**In addition to the problems with the cold-chain transport system, the loss of fresh produce during delivery is also a severe problem.**

Compared to the 1.5% loss in Western countries, the loss in fresh produce distribution in China appears to be a problem. The loss of fresh produce in circulation in China is severe. Data shows that in 2015, the loss rate of fruit and vegetables in circulation in China even reached 30%. In addition, fresh produce distribution processing, storage, distribution, distribution and delivery, etc. all have losses, compared with the industrial distribution loss rate of less than 1%, fresh produce distribution loss rate of up to 10% ~ 30%, resulting in higher fresh produce distribution costs, the average logistics costs of fresh produce in about 15% ~ 20%, some even up to 40%, especially the "last mile" distribution has become the most crucial issue. The "last mile" distribution has become the most significant loss in fresh produce distribution. The relevant data shows that the fresh produce "last mile" distribution costs account for 35% of the overall logistics and distribution costs. In recent years 90% of the express complaints are concentrated in the "last mile" distribution link.

### 3.2.3 Factors affecting consumers' willingness to buy fresh agricultural products online.

In the early days of online sales of fresh produce, as the number of users buying it grew, it became clear that many factors influenced consumers' willingness to buy. These factors also have different degrees of influence on users' online purchase of fresh produce. Taking representative fresh produce-fruit as an example, Professor Lin Jiabao constructs a model of factors influencing consumer trust in fruit e-commerce, considering three aspects: product characteristics, service quality and consumer characteristics, focusing on the role of fruit quality, perceived value, logistics service quality, website design quality, communication and trust propensity on consumer trust.



(Data source: <Analysis of the factors influencing trust of fresh produce e-commerce consumers>)



The influence model thus leads to the following recommendations: in the initial stage of online selling of fresh produce, to build a consumer trust mechanism in the fresh produce e-commerce environment, we need to.

Firstly, enhance the product's perceived value for the customer so that consumers feel that they are getting value for money.

Secondly, strictly control the quality of the fruit to ensure consumers' confidence in buying.

Third, strive to build a cold chain logistics system and improve the quality of logistics services.

Fourth, improve the quality of fruit e-commerce websites to increase the stickiness of users.

Fifth, focus on two-way communication with consumers to improve the quality of interactive relationships.

Sixth, target potential target customer groups and develop an O2O marketing model.

With the development of China's infrastructure and e-commerce, the fresh produce e-commerce market has exceeded 100 billion yuan in transaction size as of 2017. The fresh produce e-commerce industry has grown considerably. At the same time, the factors that influence users to make online fresh produce purchases have shifted somewhat, so where is the focus of the shift? There is less information available from this round of desktop research, so that I will focus on this later in this article.

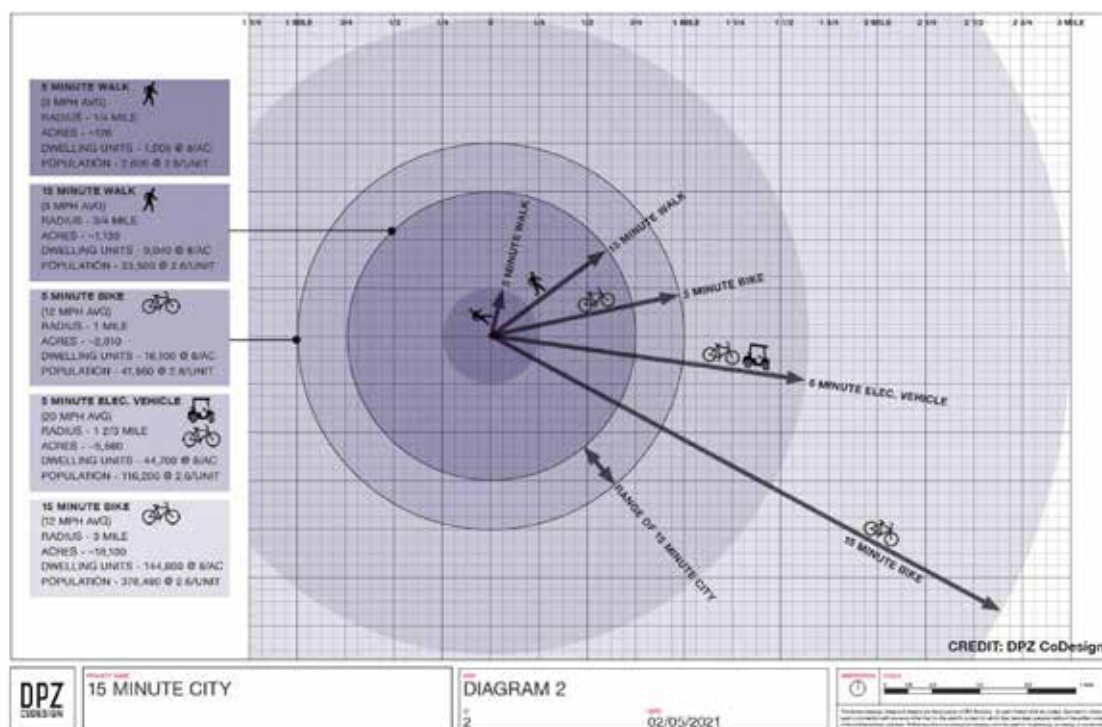
## 3.2.4 The impact of the 15-minute urban life circle on all aspects of the city

### 1. What is the 15-minute Urban Life Circle? Why do we need a 15-minute Urban Life Circle?

#### What is the 15-minute Urban Life Circle?

According to Wikipedia, the 15-minute city is an urban planning concept that aims to bring most of the daily needs of urban communities within walking or biking distance.

The 15-minute urban living area has been redefined in different scholarly discourses. The concept of e-bike and bus travel has even been introduced in addition to walking and cycling, widening the geographical scale of the 15-minute urban living area. However, due to the high instability of bus travel, rail travel leads to a blurring of the outer boundaries of this fifteen-minute metropolitan living area. There are many other ways of defining boundaries such as these, which will not be discussed here for the time being.



(Data source: <https://www.cnu.org/publicsquare/2021/02/08/defining-15-minute-city>)

As I understand it, the 15-minute circle is more about the ability to get to most of the places one needs to go in 15 minutes with a high degree of certainty (walking, cycling, etc.) without much effort to complete basic daily needs. All discussions of the 15-minute metropolitan area in this text are also based on this premise.

### **Why do we need a 15-minute Urban Life Circle?**

The core idea of the Fifteen Minute Urban Living Circle is to put people first. So the concept exists in the hope that the residents' quality of life in the living circle will be enhanced, and the quality of living will be guaranteed.

1. Larger footpaths and a better and richer cycling network will bring people a more mature urban model, shorter commuting times and a greener and more environmentally friendly lifestyle. It will also lead to a better living environment in the long run.

2. A mature 15-minute urban living area has an entire community with core services and amenities that residents can easily access on foot or by bicycle. This includes community-scale education and healthcare, essential retail such as grocery and pharmacy shops, recreational parks, workspace, etc. These are distinct from the core area educational and medical institutions etc., previously provided by large cities and can radiate throughout the small living space on a regional scale, bringing great convenience to the residents of the circle.

3. One of the critical ideas of the 15-minute urban living circle is inclusion and equity, which will significantly promote equal and free access to services, facilities and green spaces for all residents while reducing the gap between people within the living circle and ultimately between all people in society.

4. The 15 Minute Urban Living Area emphasises cycling and walking as an alternative to car travel, which will free up space that would otherwise be occupied by cars. In contrast, the increased focus on green journeys will make the entire living area more vibrant.

5. The 15-minute urban living circle will emphasise the quality of life within the process and the quality of the links between the circles, which will further orientate the current disorderly, highly car-dependent city towards a new

urban form with solid links and connections.

The establishment of a 15-minute urban living circle is partly for a better, more convenient and fairer life for the residents and partly for a healthier and more vibrant city.

### **Policy aspects of the 15-minute living circle.**

The 2016 Shanghai Master Plan calls for establishing a "15-minute community living circle", emphasizing that residents can complete all their daily activities within a 15-minute walk. Community living circles have been implemented in Chinese metropolitan areas such as Baoding and Guangzhou.

The Urban Residential Area Planning and Design Standard (GB 50180-2018), which came into effect in 2018, provides for "fifteen-minute living circle residential areas", "ten-minute living circle residential areas", "five-minute living circle residential areas". The "15-minute Living Area" refers to the "residential area where residents can meet their material and cultural needs within a 15-minute walk". The "15-minute living area" refers to a residential area where residents can meet their material and cultural needs within a 15-minute walk; it is generally bounded by an urban arterial road or the boundary line of a site, with a population of 50,000 to 100,000 (approximately 17,000 to 32,000 residential units) and well-equipped facilities.

## 2. What does a 15-minute Urban Life Circle require us to do, and what does it demand?

A 15-minute city life zone is a very convenient way to live, and it can be said to cover all aspects of people's lives, so the establishment of such a zone requires the concerted efforts of all members of society.

The C40 organisation has made several requests to establish a 15-minute urban living area and create an entire community.

1. To divide the community and understand the standards of each community's existing facilities in advance.

At the outset, a 'usability map' is drawn up to get a primary picture of each neighbourhood (what facilities are available, how easy it is to walk/bike, consider the availability and quality of basic grocery shops in the vicinity)

2. Increase the compactness within and between circles, increase the functionality of neighbourhoods and buildings and develop their mixed-use.

Compact development refers to higher density development that makes greater use of the same land area. Mixed-use development is where multiple functions exist - such as residential, retail, office, institutional or light industrial.

3. Activate the ground level economy and develop it while bringing variety, comfort and safety to the street for pedestrians.

Redesigning street frontages or other high quality outdoor public areas transforms what was simply dull, empty streets into new pedestrian attraction points. It is also possible to convert on-street parking to increase street space for pedestrians, cyclists and active commercial uses, building on the trend towards alternative use of street space during pandemics and promoting physical proximity.

4. Ensure that every community has priority services, amenities and parks.

- Create decentralised local administration centres with a centralised selection of services.
- Provide targeted support for primary and cultural retailers, concentrating activities on the neighbourhood's main street.
- Expand green space.
- Identify opportunities for infill, redevelopment and expansion of services on municipal property.
- Consider the creation of micro logistics centres.

5. Promote the ability for people to use spaces and buildings flexibly throughout the day/week.

On the one hand, it is advocating for municipalities to develop new use scenarios for those building spaces they own that are heavily tidal (let's say a school typically only has students in class during the day) during unused time slots. On the one hand, it is encouraging private owners to find ways to develop the spaces they own more as possibilities for other uses.

6. Encourage more temporary use to increase community prosperity and develop and build a more diverse community economy.

Allow temporary 'simultaneous' use of vacant buildings and plots, such as temporary shops, restaurants, pocket gardens, sports or cultural events. This approach - sometimes called 'temporary urbanism' - can quickly bring activity to an area, provide opportunities to experiment and test uses, help shape the character of a place, and provide space for start-up businesses.

The six requirements set out in the C40 are more from the perspective of urban planning, where residents can participate but will vary from sector to sector. From the perspective of the fresh produce-to-home sector, the focus may be on expanding the possibilities of space use, activating the ground economy and ensuring that every '15-minute neighbourhood' has easy and fast access to facilities.



### 3. Some examples of successful 15-minute urban living circle applications.

The '15-minute city' is a flexible and intuitive paradigm for people-centred urban development with many names and forms worldwide. This website provides an overview of 15-minute city policies in seven cities — Barcelona, Bogotá, Buenos Aires, Melbourne, Milan, Paris, and Portland – to motivate other local governments worldwide to develop their methods. The cities have directly exchanged the information it contains. It outlines the city's strategy, the history of its growth, and significant aspects and excellent reproducible practices in each case. There are different connections to related research and papers.

Among the approaches and best practices found are:

#### - **Barcelona**

- Barcelona's 'superblock' concept was initially adopted in the Poblenou neighbourhood where the number of ground-level commercial businesses increased by 31%, from 65 to 85, showing a favourable influence on commercial activity.

#### - **Bogotá**

- Bogotá's idea of "dynamic neighbourhoods" aims to improve quality of life through renovating streets and neighbourhoods, notably through a system of child priority zones centred around childcare centres.

#### - **Buenos Aires**

- Buenos Aires aims to improve walking and cycling infrastructure, notably by building one of the world's largest car-free zones and bringing green space, fresh food markets, health facilities, recycling centres, and other amenities to every neighbourhood.

#### - **Melbourne**

- Informed by Local Liveability research, Melbourne began executing a 20-minute pilot program in three regions and built a Movement and Place framework that places people at the centre of transportation planning. According to the city's study, the most significant amount of time individuals are willing to walk to meet their daily demands is 20 minutes.



**- Milan**

- Through its open squares and roads programs, a sustainable urban mobility strategy, and the implementation of a 30 km/h city speed restriction (down from 50 km/h) on 60% of the road network, Milan is improving streetscapes.

**- Paris**

- Paris is treating schools as neighbourhood 'capitals,' allowing them to serve many purposes besides early education and enhancing local business networks, services, and manufacturing under the 'Produced in Paris' brand. Residents in Portland benefited from baseline research exploring the possibilities of 20-minute neighbourhoods and an anti-displacement action plan that guarantees equitable development and prevents displacement and its consequences.

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[https://www.c40knowledgehub.org/s/article/Benchmark-15-minute-cities?language=en\\_US](https://www.c40knowledgehub.org/s/article/Benchmark-15-minute-cities?language=en_US)

#### 4. China's exploration of the 15-minute city.

At the first World Cities Day Forum held in Shanghai in October 2014, the basic concept of a "15-minute community living circle" was proposed to build a "community living circle" that is low-carbon and resilient, diversified and inclusive, and equitable and collaborative.

In 2016, Shanghai released the country's first "15-minute Community Living Area Planning Guidelines", "building a network of urban community living areas within 15 minutes walking distance and suitable for living, working and visiting." Since then, the 15-minute community living circle has been gradually extended to other cities for exploration and practice.

In 2020, the State issued the "Guidelines for Municipal Territorial Spatial Master Planning", which explicitly uses "community living circles" as the basic unit to build urban "health and safety units".

In Beijing, data shows that by the end of 2020, 1,772 "quarter-hour community service circles" had been built, covering 3,182 communities, covering more than 98% of urban communities, completing the construction task. Beijing has built and upgraded more than 6,000 primary convenience commercial outlets such as vegetable retail, convenience stores, breakfast and domestic services, cultivated 6,025 standardised shops for the living service industry, created ten demonstration blocks for the live service industry, and reached 282 convenience stores per million people. According to a sample survey conducted by a third-party organisation, 86.7% of the respondents were satisfied with the living services or convenience facilities in and around their communities.

On 28 September, the China Association of Chain Stores (CACS) released its "China City Convenience Store Development Index" was released. Xiamen City in Fujian Province, selected as a pilot area for the "One-Minute Convenience Living Circle", topped the list with a total score of 92 points and a growth rate of 7.14%. According to the data, the saturation rate of convenience stores in Xiamen is 3,443 people per shop, which means there is one convenience store for every 3,443 people. Most cities in China are at a level of around 5,000 people/store, with some cities even having one convenience store for every 20,000 to 30,000 people.

More than 700 standardised vegetable markets have been renovated and newly built in Chongqing, and 1,247 poultry and meat business stalls in vegetable markets will be supported to be equipped with cold chain facilities in 2020, with equipment rate of 78%. Continuing to promote the construction of standardised community commercial outlets, 200 community model supermarkets, 2,998 community-integrated supermarkets and 4,180 community convenience retail outlets have been selected and supported to demonstrate and drive the standardised development of community commerce. Moreover, Chongqing Municipality also issued the "Notice on the Three-Year Action of Branding and Chainization of Convenience Stores", guiding the development of "one shop with multiple functions" brand chain shops by Jiameijia, Kegoand Yixi Flash, and encouraging "711" and "Rosen" layout of 24-hour convenience store chains. At present, there are 56 enterprises with more than ten chain shops in Chongqing, with 6,225 shops.

In 2021, the country released the industry standard "Technical Guide for Community Life Circle Planning" to standardise and guide the planning of community life circles nationwide. Responding to urban problems with communities and providing a healthy living environment has also become an international consensus in the post-epidemic era. Significant cities worldwide put forward community-specific action initiatives one after another.

The 2021 Shanghai Urban Space Art Season closed on 30 November. At the closing ceremony, 52 cities, including Shanghai, Tianjin, Changchun, Nanjing, Hangzhou, Hefei, Fuzhou, Wuhan and Chengdu, launched the "15-minute Community Living Circle" initiative - Shanghai Initiative.

The Shanghai Initiative proposes to promote all-round human development and social progress through "three transformations": people-centred conceptual transformation, pluralistic and collaborative community governance transformation, and all-around digital transformation. "Liveable, workable, playable, learnable and nurturing".

List of Co-initiative Cities:

Beijing, Tianjin, Shanghai, Chongqing, Shijiazhuang, Taiyuan, Hohhot, Shenyang, Changchun, Harbin, Nanjing, Hangzhou, Hefei, Fuzhou, Nanchang, Jinan, Zhengzhou, Wuhan, Changsha, Guangzhou, Nanning, Haikou, Chengdu, Guiyang, Kunming, Xi'an, Lanzhou, Xining, Yinchuan, Dalian, Qingdao, Ningbo, Xiamen, Shenzhen, Wuxi, Changzhou, Suzhou, Nantong, Zhenjiang, Yancheng, Taizhou, Huzhou, Jiaxing, Shaoxing, Jinhua, Zhoushan, Wuhu, Tongling, Anqing, Chuzhou, Chizhou, Xuancheng

### 3.3 Stakeholder Analysis

After conducting extensive secondary data and trend research, a macro-level analysis of the problems in the fresh produce industry was carried out, and an in-depth understanding of the impact of the 15-minute cities was gained. To further explore the issues in the fresh produce industry and identify the focus of the next phase of primary research, it was necessary to conduct an industry-wide list of stakeholders and analyse them to understand at what stage problems were occurring that were making the user experience worse. At the same time, we need to prepare for the next user research stage in a targeted manner. In this phase, I approached it from six angles:

- Supply of raw materials.
- Short-term storage of fresh produce.
- Sale/handling of fresh produce.
- Transportation of fresh produce.
- Sale of fresh produce online.
- The others.



## Supply of raw materials.

**Raw material suppliers:** Suppliers are mostly located at the forefront of the entire supply chain and are the providers of raw materials. Within the fresh food industry, they supply different types of fresh food such as seafood, vegetables, raw poultry, etc. They can be orchards, vegetable farms, pig farms, etc. At this level, the quality of the fresh food greatly impacts the consumer's perception.

**Raw material handling plants:** Raw material handling plants are also at the front end of the supply chain and are the first level of processors of raw materials. In the fresh food industry, many fresh products cannot be sold directly to the merchants, mainly live chickens, live pigs, and live fish. This is where the raw material processing plant carries out the first round of processing of the raw material and provides the necessary treatment before the goods can be sold. They can be chicken killing plants, vegetable processing plants, etc. At this level, how the product is handled does not have a great impact on the consumer's perception.

## Short-term storage of fresh produce.

Distribution centres are located in the middle of the supply chain and act as distributors and temporary storage for goods. Unlike general commodities, fresh produce is perishable. It requires a high level of storage, which makes it necessary for the distribution centre to keep it fresh and cold while also receiving and dispatching it as efficiently and conveniently as possible. The impact at this level is mainly unreachable at the consumer level.

## Sales/handling of fresh produce.

**Point of sale:** The point of sale is at the very end of the supply chain and acts as the sales office for fresh produce. The point of sale is also different from the general merchandise in that it is susceptible to wear and tear and requires a high level of storage capacity. At the same time, the point of sale has the right to set prices and decide how to dispose of poor quality goods such as expired goods. At this level, the impact on the in-store consumer is enormous.

Processors/restaurants etc.: These are at the end of the fresh produce supply chain and in the middle of the general product chain, acting as a consumer and processor. This article only discusses the fresh produce industry, so we will not analyse this in-depth.

Waste Disposal Point: The waste disposal point is in the branch chain of the fresh produce supply chain and acts as a receiver. Since consumers do not have access to them, they have little impact on the consumer experience.

## Transportation of fresh produce.

**Cold chain companies:** Cold chain companies are an essential part of the fresh produce supply chain, acting as a transporter and linker. Due to the special nature of some fresh products that need to be kept fresh and cold (e.g. frozen meat, chilled fish, etc.), cold chain transport equipment is required to have refrigeration capabilities, unlike that of general commodities. The ability to retain freshness is critical to the freshness of the fresh food, and again has a significant impact on the consumer experience.

**General carriers:** Here, general carriers are distinguished explicitly from cold chain carriers, acting as transporters and linkers. Here they transport fresh products that do not require exceptional preservation (e.g. potatoes, pumpkins, etc., that can be stored at room temperature for a long time). It has to do to transport these foods as if they were general consumer goods, and there are generally no problems affecting the quality of the product. So it has little impact on the consumer experience.

## Sale of fresh produce online.

**Fresh produce e-commerce companies:** Internet fresh produce e-commerce is a further extension of the supply chain going to the consumer. The e-commerce company acts as a rule-making manager. Since it is not very convenient for many people to buy fresh produce, fresh produce e-commerce companies are flexing their muscles. With a variety of new formats (home delivery, pick-up points) to reduce the time cost of buying fresh produce, the different service models used by companies have a big impact on the user experience.

**Pick-up points:** Pick-up points are one of the models of online fresh produce e-commerce that require users to pick up pre-ordered items from a pick-up point. They can be convenience stores that serve as temporary storage, or they can be the home of one of the group buyers. As they don't take responsibility for the product, this makes a huge difference, and a good pick-up point will sort and store the fresh produce you buy correctly. Products that need to be frozen stay frozen, and products that need to be kept fresh stay fresh. But a lousy pick-up point may not pay as much attention to your fresh produce, and from time to time, it may spoil. So this stage has a significant impact on the user experience.

**The takeaway delivery end:** The takeaway delivery of fresh produce acts as an extension of the supply chain as a transporter. Again, there is a big difference at this part. When it comes to fresh products that need to be kept fresh and cold, the exact requirements are put forward for the transporters to keep the products cold; some of them (takeaways) will do some cooling facilities. However, in more cases, these fresh goods are transported directly as regular products, which reduces the quality of the products. In addition, some platforms have random and highly mobile delivery staff, which makes it challenging to ensure timeliness. The delivery side has the most significant impact on the consumer as it has direct contact with the product and the customer and largely determines its quality.

## The others.

**Government departments:** The planning and construction of infrastructure by government departments for things like food markets and hypermarkets impact the convenience and speed of fresh food shopping for the surrounding users. If a sufficient number of supermarkets can be deployed to enable all users to buy fresh food quickly, then the problem of food shopping will be significantly alleviated.

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# User Research



After conducting background research, I learned a great deal about how people's daily consumption patterns had changed in the context of the new epidemic and the original drawbacks of the fresh food industry. After consolidating the information, I determined that the topic I wanted to do niche research was. In the context of China's big cities, problems such as the new crown epidemic, oversized cities, and poor infrastructure have led to a lot of inconveniences in terms of daily fresh food shopping. At the same time, with the premise that there are also specific problems in the fresh produce market, how to use the concept of the fifteen-minute city as a guiding idea to solve the difficulty of buying fresh produce for the residents inside the big cities nowadays. The next step was to conduct user research to understand the user base of fresh produce shopping in the big cities. At this stage, a quantitative analysis was carried out to determine what problems were being faced at this stage, followed by a qualitative analysis to determine the order of importance of the issues.

## 4.1 Quantitative Research

In a quantitative analysis study, a large amount of data needs to be accumulated to reflect more objectively what most users think. So I started by searching and listing some of the user data. Then I consolidated some of the problems in the industry and possible user problems from the background research above and designed a questionnaire on the fresh food buying experience of users in major Chinese cities. The quantitative analysis phase involved designing the questionnaire and analysing the information collected to identify the main points of discomfort in the whole fresh food buying process and prepare for the qualitative analysis.

- General data
- Questionnaire&Findings
- Summary



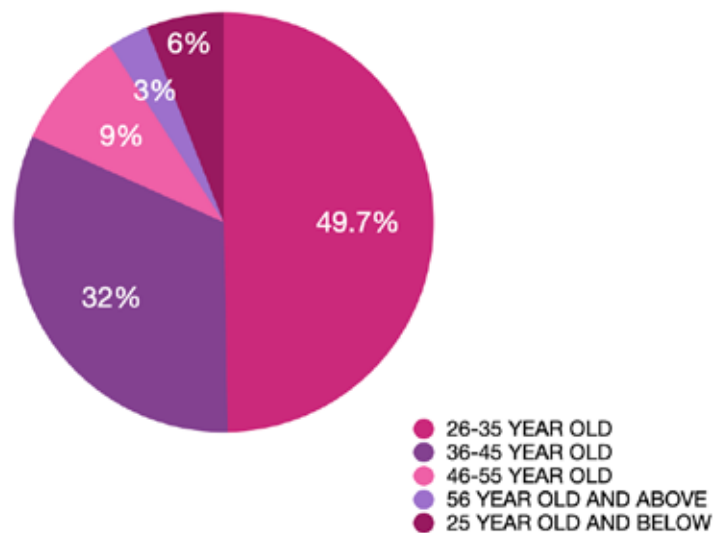
### 4.1.1 General data.

Before the questionnaire research, some basic information about users who use fresh produce e-commerce was searched online (source: China Fresh Produce E-Commerce Industry Research Report), mainly from three perspectives to give an overview of the overall situation of users.

#### Chinese fresh produce e-commerce users are gradually getting younger.

With economic development and changing times, China's consumer base gradually changes. The post-80s and post-90s become the backbone of consumption, with data showing that 55.7% of fresh produce e-commerce users are aged 35 and under.

#### AGE DISTRIBUTION OF FRESH FOOD E-COMMERCE USERS IN CHINA IN 2021

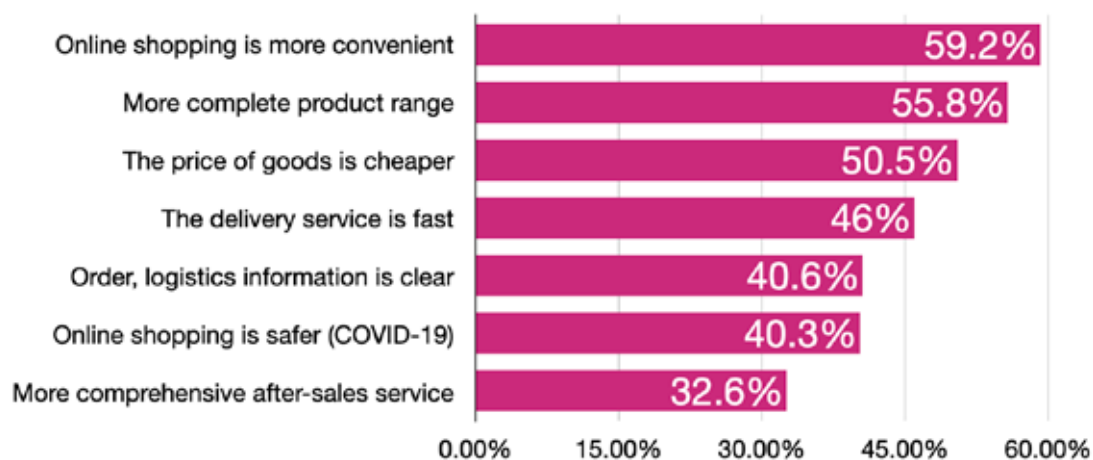


(Data source: <China Fresh Produce E-Commerce Industry Research Report>)

#### Reasons and expectations for buying fresh food online.

The post-80s and post-90s consumers are less sensitive to fresh food prices, pay more attention to convenience when buying fresh food, have higher requirements for fresh food quality, and have "faster" requirements for delivery speed.

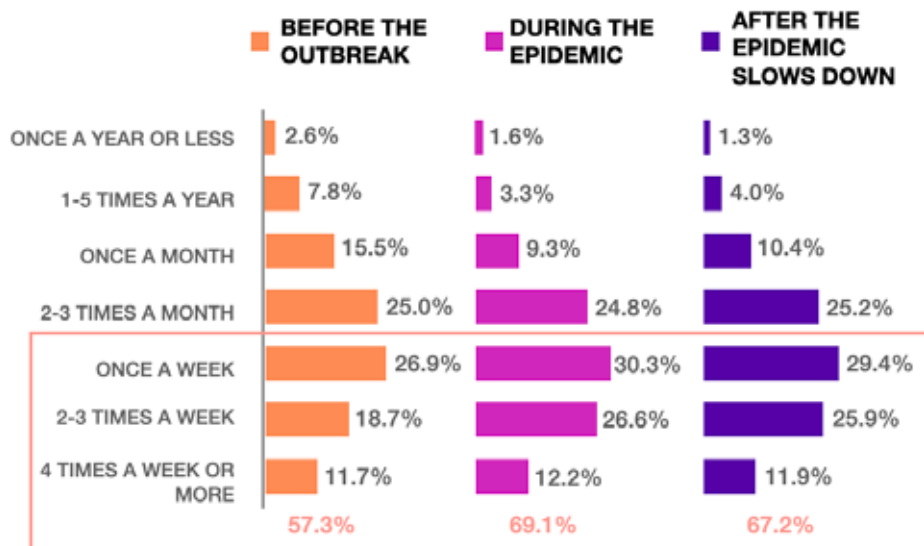
### REASONS FOR CHINA'S POST-80S AND 90S TO CONSIDER USING FRESH FOOD E-COMMERCE TO BUY GOODS IN 2021



(Data source: <China Fresh Produce E-Commerce Industry Research Report>)

### The impact of the epidemic on fresh produce e-commerce

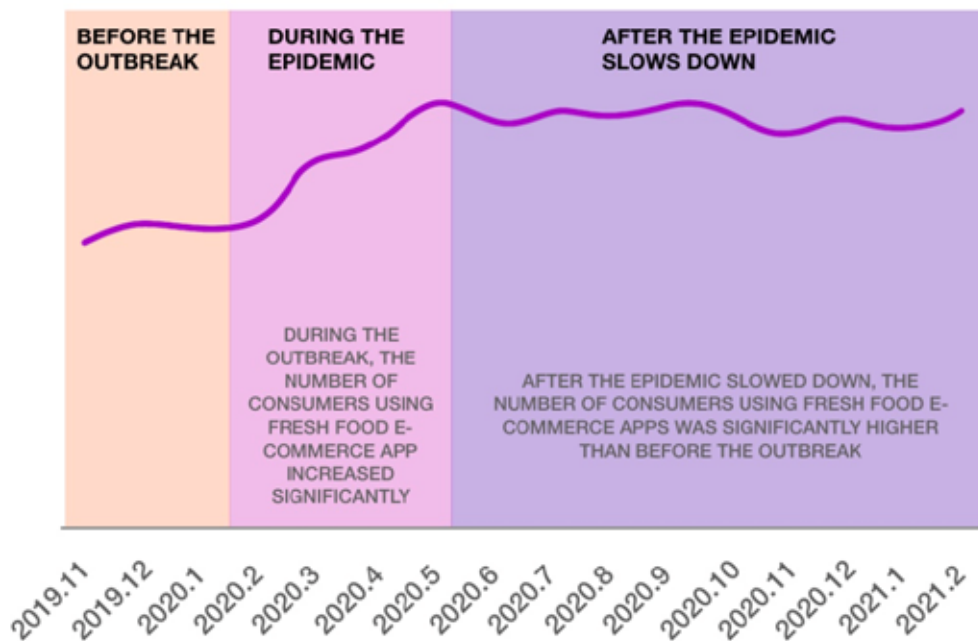
#### THE FREQUENCY OF FRESH FOOD E-COMMERCE USERS IN CHINA BEFORE, DURING AND AFTER THE EPIDEMIC IN 2020



(Data source: <China Fresh Produce E-Commerce Industry Research Report>)

The 2020 epidemic accelerated the online penetration of fresh produce, with data from Avery showing that the number of times consumers used fresh produce e-commerce APPs rose significantly during the epidemic in early 2020 and fell slightly after the epidemic subsided, but was still much higher than before the epidemic. According to the research data, the frequency of purchase by fresh produce e-commerce users after the epidemic subsided was significantly higher than before, which shows that the epidemic has cultivated the habit of using fresh produce e-commerce platforms for consumption.

**CHANGES IN THE TOTAL NUMBER OF MONTHLY USE OF FRESH FOOD E-COMMERCE APPS BY CHINESE FRESH FOOD E-COMMERCE USERS FROM NOVEMBER 2019 TO FEBRUARY 2021**

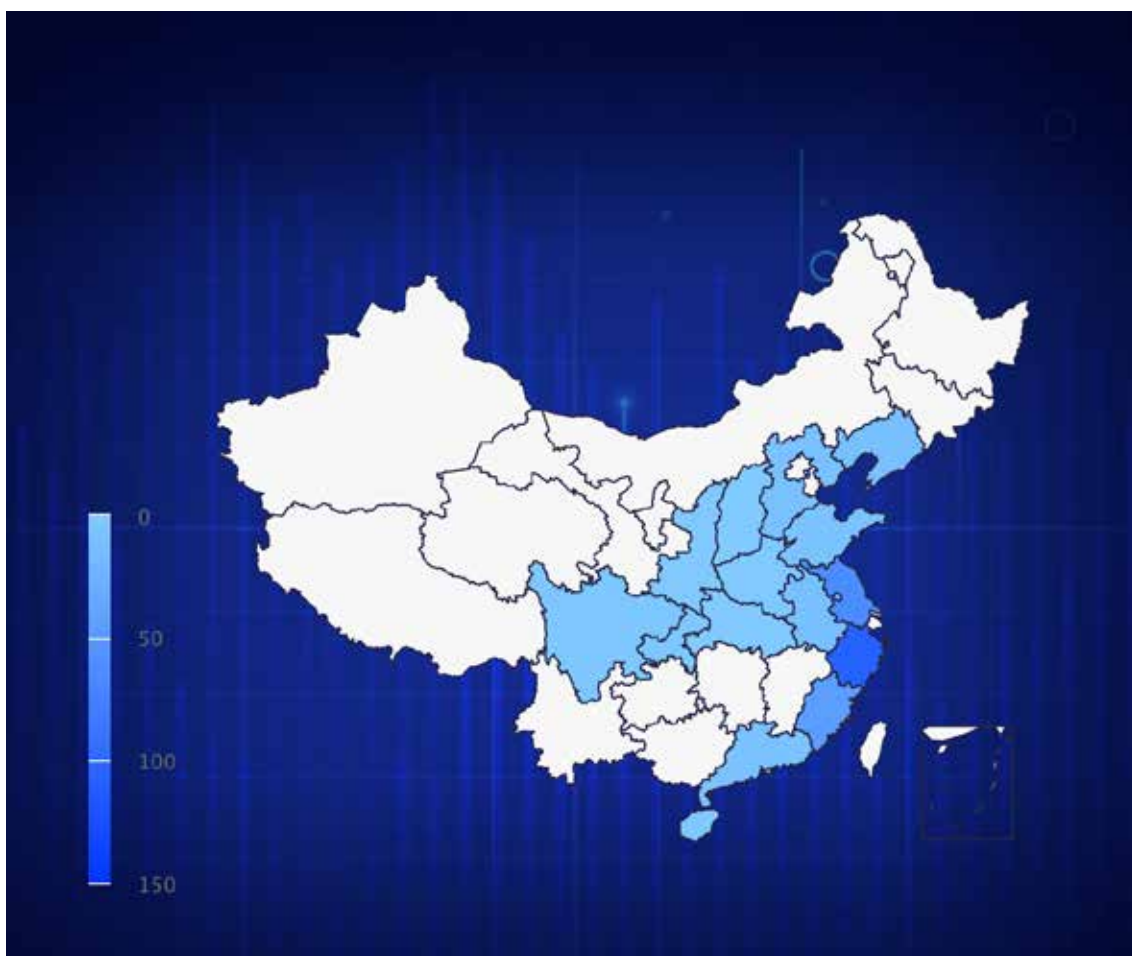


(Data source: <China Fresh Produce E-Commerce Industry Research Report>)

### 4.1.2 Questionnaire&Findings.

This questionnaire consists of thirteen questions. The questionnaire was designed to address the epidemic's impact on daily life and the perception of everyday fresh food shopping. To ensure the reliability of the questionnaire, the ratio of men to women was kept at around one to one, taking into account the fact that men and women may not buy fresh food with the same frequency. To ensure that the respondents had a certain level of experience, the age distribution of the respondents was more likely to be young adults between 26 and 40 years old. To ensure that the survey aligns with the theme of urban living in large cities, the survey was focused on the southeastern coast of China (mainly Zhejiang, Jiangsu and Fujian provinces), where the economy is more developed.

Regional distribution of the questionnaire.



## Questionnaire.

### 疫情下消费小调查



\*1. 请问你的性别是

男

女

\*2. 请问你的年龄是?

\*3. 请问疫情对你生活的影响有多大?

没什么影响  1  2  3  4  5  6  7 影响非常大

\*4. 疫情对你生活的改变更主要的是在哪些方面? 【多选题】

影响了我的日常生活中的消费购物

改变了我的日常的工作、学习方式

我无法做到外出旅游

我和朋友不能面对面在一起了

我的心理状态变化了

其他

\*5. 疫情对你影响最深的是哪些方面? 【多选题】

日常消费的场景更多变成了线上

我需要网课/远程办公

我无法出门旅游

出现了心理问题

其他

\*6. 你进行线上消费的频率是怎样的?

一天多次

一天一次

几天一次

一周一次

几周一次

几乎没有

从不

\*7. 进行线上消费的品质主要是? 【多选题】

生鲜食物等

衣服鞋子等

家用电器等

日常生活用品等

其他

\*8. 你有因为疫情原因线上购物频率增加吗?

有

并没有

- \*9. 疫情以来，线上消费比例增加最多的品类是？
- 生鲜食物等
  - 衣服鞋子等
  - 家用电器等
  - 日常生活用品等
  - 其他
- \*10. 为什么会选择线上购买生鲜食物呢？【多选题】
- 价格更有优势
  - 更加方便，快捷
  - 更加安全
  - 品种更多
  - 品质更高
  - 就只是试试看
- \*11. 现在的线上购买生鲜食物的整个流程的感受如何？
- 非常不满意  1  2  3  4  5  6  7 非常满意
- \*12. 你觉得线上生鲜购买的哪个阶段拥有较差的体验感呢？
- 挑选商品的阶段
  - 下单到付款的阶段
  - 付款到商家发货阶段
  - 购买商品配送阶段
  - 商品到了要去取的阶段
- \*13. 疫情完全过去后，你还会继续线上购买生鲜食物吗？
- 会
  - 不会

提交

问卷星 提供技术支持

### English version:

How much has the epidemic affected your life? (7-degree scale)

In what ways has the epidemic changed your life more? (Multiple choice)

In what ways has the epidemic affected you most? (Multiple choice)

How often do you spend money online? (Single choice)



What are the main categories you consume online? (Multiple choice)

Have you increased your online spending frequency due to the epidemic? (Multiple choice)

Since the epidemic, what is the category in which you have increased your online spending the most? (Multiple choice)

Why do you choose to buy fresh food online? (Multiple choice)

How do you feel about the whole process of buying online now? (7-degree scale)

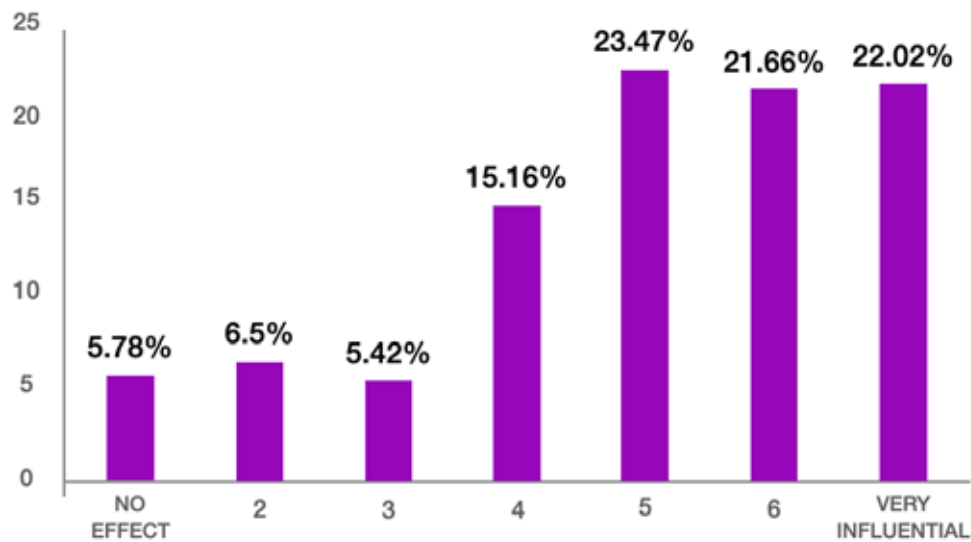
Which stage of online fresh food buying has a poorer experience? (Multiple choice)

Will you continue to buy fresh food online after the outbreak is completely over? (Single choice)

### **Findings:**

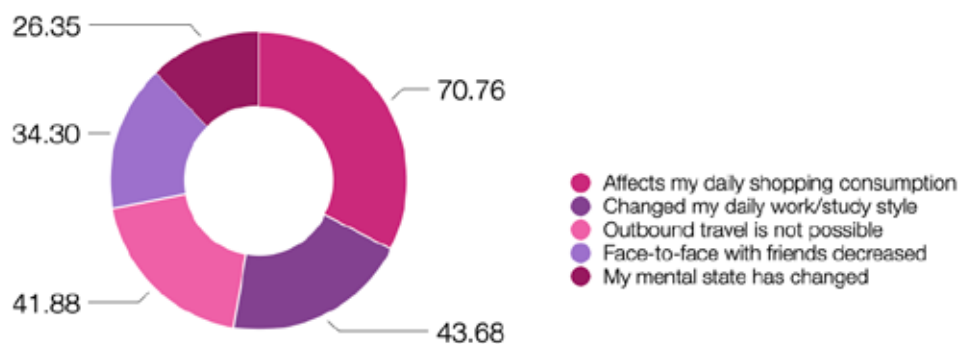
This section is an analysis of the content of the questionnaire, which was designed for users living in China. Specifically, we will gradually analyse the results and analysis process of each problem.

The first question is about how much the epidemic has affected your life? In this question, I took a seven-degree scale to tabulate the results. (The smaller the number the less the impact of the epidemic, the larger the impact the greater the impact.) The graph shows that the proportion of "5, 6 and 7" indicating a greater impact is over 65%, while the proportion of "1, 2 and 3" indicating a lesser impact is less than 20%. This shows that the vast majority of people in China are indeed feeling the impact of the epidemic on their lives.

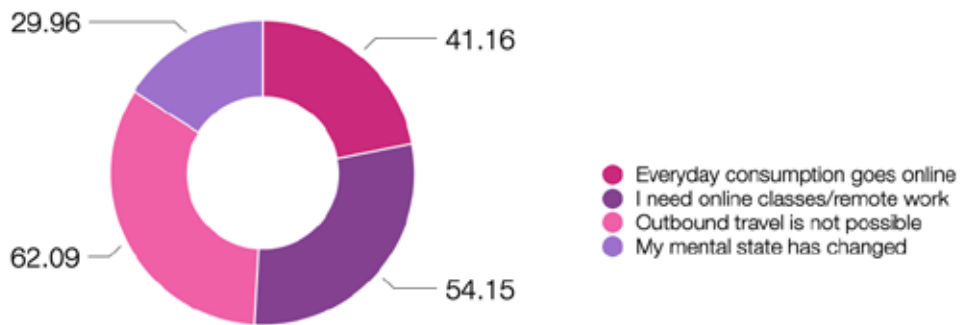


So what is the impact? The second question was: In what ways has the epidemic changed your life more? More than 70% of people said that the epidemic had had a significant impact on their daily life in terms of spending and shopping. This shows that in China, whether it is the blockade caused by the epidemic or the frequent nucleic acid tests carried out around the country.

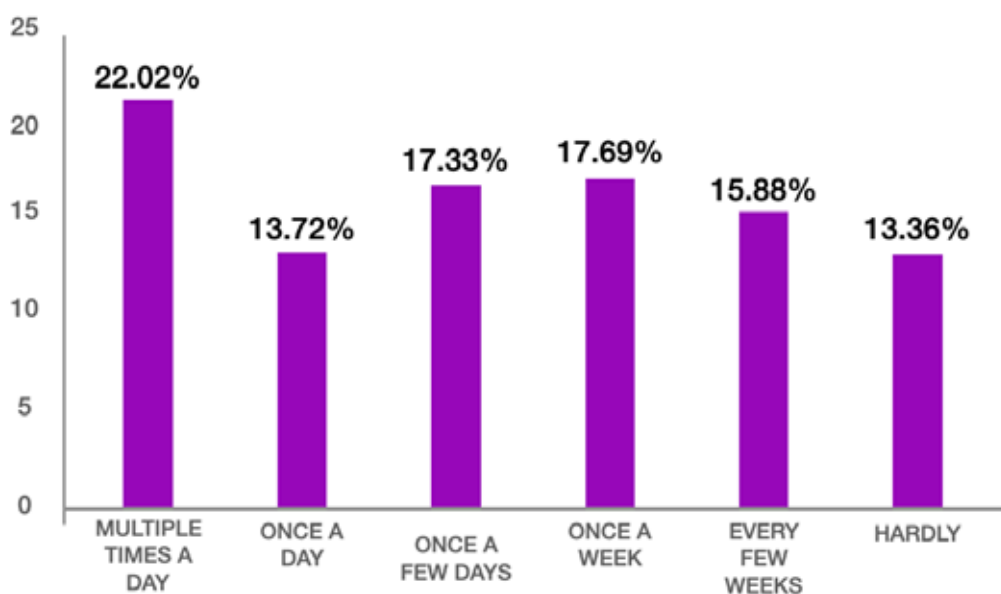
The most significant impact on people's livelihoods is that the epidemic has spread uncertainty and fear, making it impossible for people to do their everyday shopping as before.



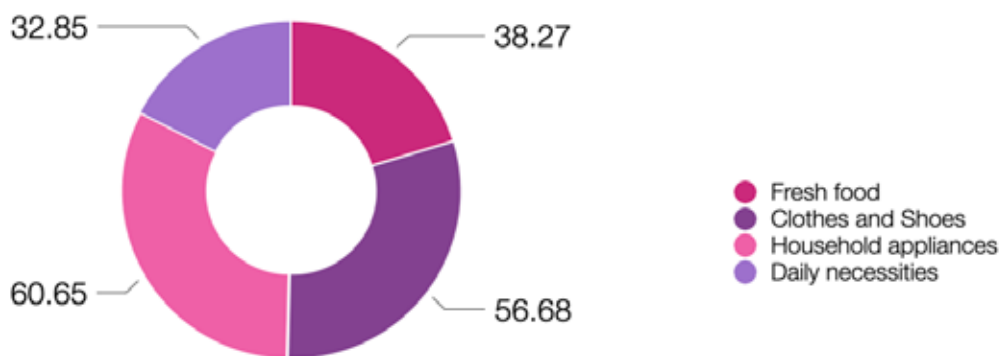
In addition, more than 40% of the results show that the epidemic has also affected people's lives and work. The blockade of the epidemic has led to a deepening of the divide between regions, and the postponement or cancellation of travel plans has also caused discomfort. This is also supported by the answers to the third question "What has affected you the most?".



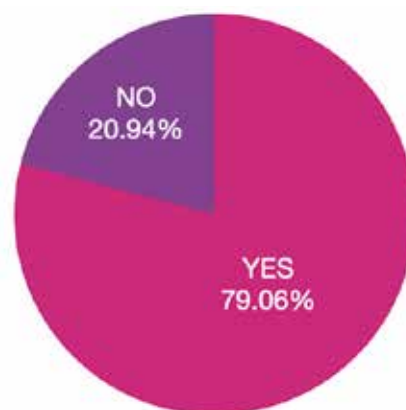
The fourth question was "How often do you spend money online?" The answers to this question show that the most frequent category is "multiple times a day", which accounts for more than 20% of the answers. The other categories also accounted for more than 15% of the answers, while the "hardly" and "not at all" categories only accounted for about 10% of the answers. This shows that people are already familiar with online shopping as a tool for everyday use. It also shows that the willingness to shop online is at a high level in China.



The fifth question was, "What are the main categories of online purchases?" Generally speaking, the results show that people are now shopping online for a wide range of items, from fresh food to clothes for everyday wear and even large items such as household appliances. However, it is also worth to be noticed that of all the possible categories listed, fresh food does not account for as much as one might expect, accounting for less than 40% of the total. As it is normal for people to spend a lot of time on their daily grocery shopping activities, many of them would prefer to buy online, which is more convenient and simpler. However, the proportion of online purchases that are actually made is relatively small, so there must be something wrong with this phenomenon. The answer also suggests that there are problems with online fresh food purchases.

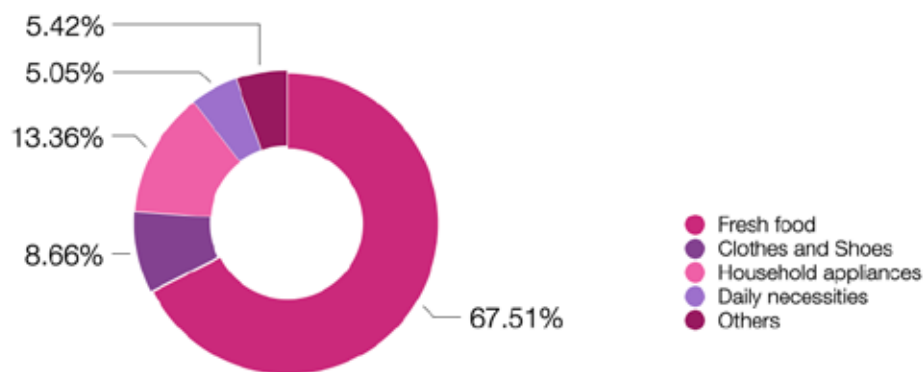


In the question "Whether the epidemic has increased the frequency of online purchases", it is clear that around 80% of users have increased their online purchases to varying degrees due to the epidemic. This also shows that the epidemic has boosted China's e-commerce economy once again.



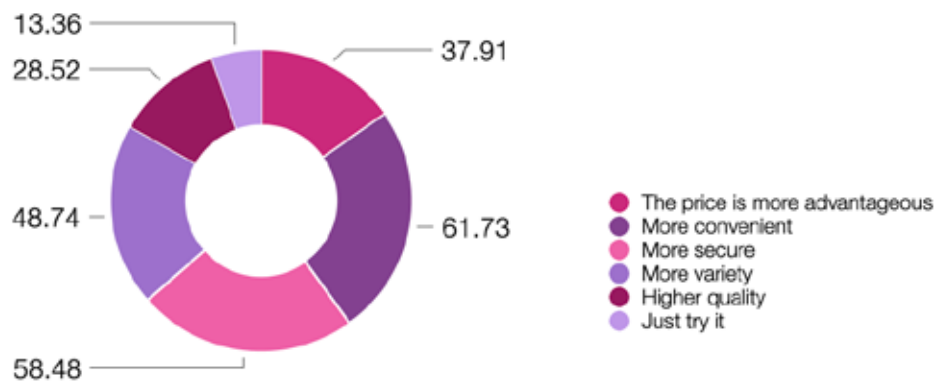
It is also clear to see that the category that saw the largest increase in consumption during the epidemic was fresh food, which accounted for nearly 70% of the total.

This shows that on the one hand, during the blockade phase caused by the epidemic, people's demand for essential goods did not decrease. In order to be able to carry on with their normal lives, people were forced to turn to online fresh food e-commerce purchases. On the other hand, the epidemic has led to a significant increase in the number of fresh produce e-commerce users, which is both a great challenge and a great opportunity for fresh produce e-commerce.

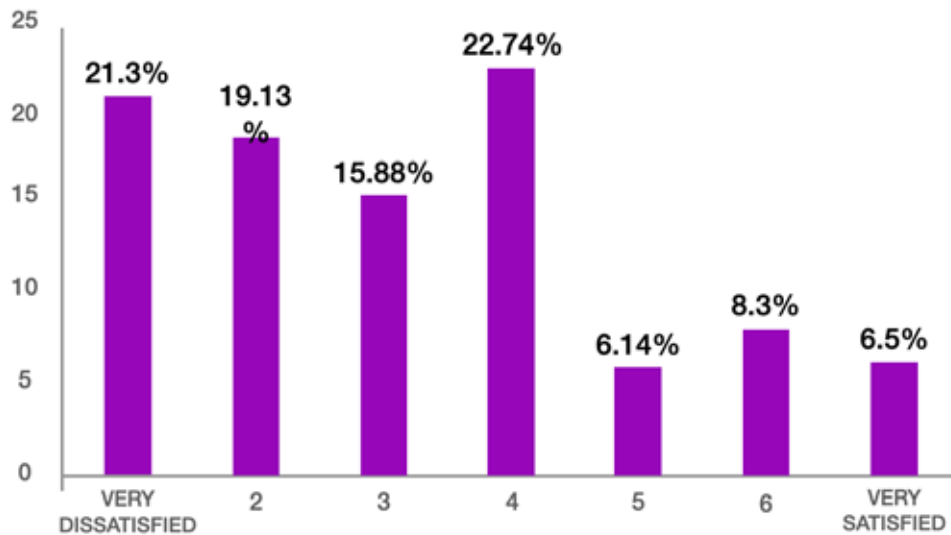


Among the reasons for choosing to buy fresh food online, the top reasons were more convenient, faster (61.73%), safer (58.48%) and more categories (48.74%).

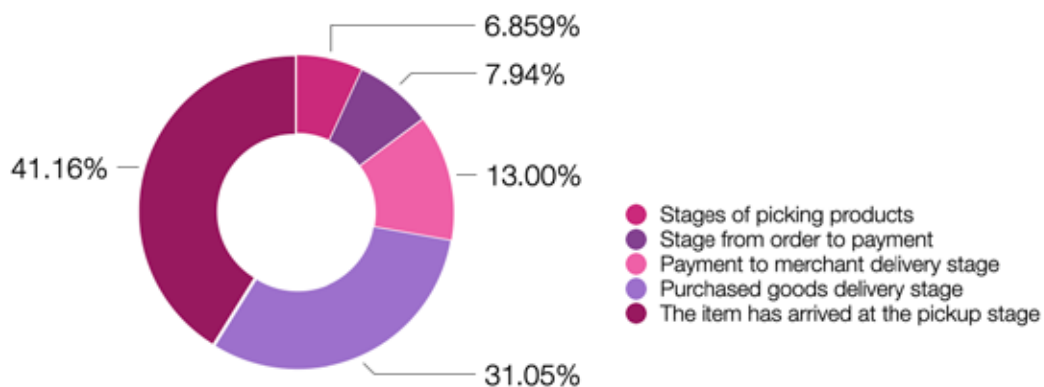
This shows that the three factors that people focus on most when shopping for fresh produce are: convenience, the safety of delivery and availability of variety. However, as the psychology of the consumer is very complex, the analysis of these reasons will require further interviews and research.



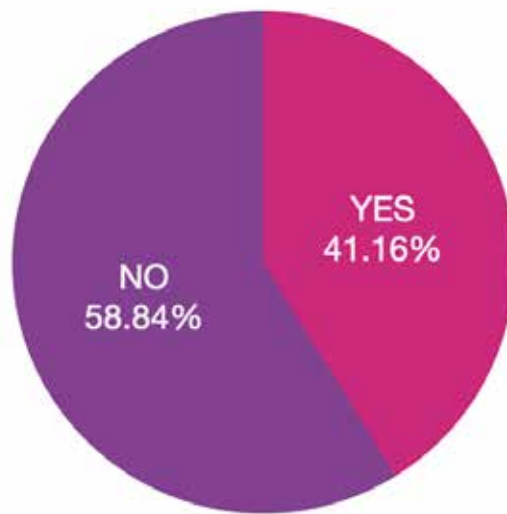
In the question "How do users feel about the whole process of buying fresh food online nowadays?" In this question, you can clearly see that the first half of the question (those who are dissatisfied) is much higher than the second half (those who are satisfied). The highest percentage of 22.74% is also an intermediate level of satisfaction, indicating that people generally feel that there are some problems with the fresh food buying process but they don't know where the problems lie.



So at what stage of the online fresh food buying process do people experience a relatively poorer experience, the data in this question may provide some answers. As you can see, the second half of the experience is far worse than the first half. The worst stage of the user experience is when the product is finally picked up (41.16%), followed by the delivery stage (31.05%). At this stage, it is possible that the speed of delivery did not meet the user's expectations, and that the quality of the products delivered did not meet the user's expectations. However, the exact reasons for this will have to be analysed further in the following targeted interviews.



The last question was "Will you continue to buy fresh food online after the epidemic has completely passed". The fact that nearly 60% of people choose not to continue to use online fresh food shopping after the epidemic is over is partly due to the fact that the majority of people are unhappy with the current online fresh food shopping process. If there were ways to address these pain points, the proportion of people who would still choose to shop online for fresh produce would be higher than the current figures.





### 4.1.3 Summary

- The Covid-19 has had a significant impact on the daily lives of Chinese people.
- People have generally gotten into the habit of shopping online.
- There is a high demand but not an increased willingness to buy fresh food online.
- The frequency of online shopping has generally increased due to the Covid-19, most notably for fresh food.
- Consumers buy fresh food online for a variety of reasons.
- There is a general dissatisfaction with the existing fresh food e-commerce system.
- When shopping on fresh food e-commerce platforms, people are generally less satisfied with the post-delivery phase.
- The habit of buying fresh produce online has continuity and will not end with the covid outbreak's end.

## 4.2 Qualitative research

After completing the quantitative analysis, a lot of rough insights were gained. At the same time, many actual user issues were identified that had been overlooked in the background research. The grim data only shows at what stage the user experience is poor. Still, to get the specific needs of the users, in-depth interviews with various categories of users are needed. To understand what flaws and possible opportunities exist in the current "fresh food e-commerce" landscape, I have conducted an inventory and analysis of China's mainstream fresh food e-commerce service models.

- Case study
- Interview&findings
- Summary

## 4.2.1 Case study

In the case study stage, I chose the two most mainstream and representative Internet fresh food sales models in China: the front-end warehouse model (represented by "Daily Fresh") and the fresh food "supermarket + restaurant + delivery" trinity model (represented by "Fresh Hema").

### Daily Fresh-The front-end warehouse model

Daily Fresh, a technology-driven, creative community retail enterprise founded in November 2014, is devoted to making every home feel safe and comfortable in their food. Daily Fresh intends to become China's most powerful digital platform for community retail, pushing the industry's digital revolution via innovative technologies and business models. Daily Fresh has pioneered the "front-end warehouse" concept in first- and second-tier cities, delivering "over 4,000 goods in as little as 30 minutes" to tens of millions of homes in 16 cities, and has the most significant economic model for front-end warehouses. Daily Fresh will launch an intelligent food court business in the second half of 2020 and a retail cloud company in 2021 to further drive the digitalisation of the community retail industry's entire chain, leveraging its core technology capabilities accumulated in the retail vertical and its self-developed intelligent system, AI Retail Network, to further empower participants in the community retail industry to achieve digital transformation.



### Fresh Hema-"supermarket + restaurant + delivery" trinity model

Fresh Hema, a brand owned by Alibaba, is a pioneer in the new retail format of fresh food supermarkets and restaurants, mainly addressing consumers' needs for "food" scenarios while covering high-frequency consumer goods for daily use. It provides integrated online services through offline shops and online APPs, with offline shops taking on the function of front warehouses. At the same time, Fresh Hema combines supermarkets and food and beverage

to instantly strengthen the demand for fresh products. According to Ali's financial report, as of 30 June 2020, Fresh Hema had 214 self-operated shops, mainly located in first and second-tier cities.

#### ANALYSIS OF THE BUSINESS MODEL OF FRESH HEMA



#### Summary of models:

The development of fresh food e-commerce today is mainly divided into the following models: the first is primarily to Fresh Hema, super wuzhong, 7fresh and other warehouse-store integration, catering and home integration model, customers can both place orders online, shop delivery to home, but also directly to the shop self-pickup. In-store purchases and in-store dining services are available after purchase, which is very attractive to customers seeking a high quality of life and new things. This model of fresh food e-commerce is mainly in pursuit of improving customer service, providing customers with exceptional service and increasing consumer stickiness in the service, which is conducive to achieving repeat purchases at a later stage. The second model is the front-end warehouse + home delivery model represented by Daily Fresh, Dingdong Buy and Meituan Buy, which moves warehouses from distant urban centres to places closer to consumers, analyses customer preferences through online consumer order data presupposes stocking and enables the platform to deliver goods in 30 minutes after consumers place their orders. Due to the epidemic's impact, consumers have slowly developed the consumer mentality and habit of placing orders online for delivery to their homes. The front warehouse has a significant initial investment cost and a heavy asset model to complete sub-packing, sorting, storage and delivery in the shortest possible time to reach customers. The third is a combination of community grouping and shop self-pickup or delivery to the home model represented by Xingsheng Yousei and Ten Aloe Group, where the head of the group is stationed on the platform and earns commission by sharing links.

Customers place orders online in WeChat groups, small programs and app pre-sales and go to nearby community shops the next day to self-pickup, up or request delivery to home. It adopts an asset-light S2B2C model, with fresh fruit as the core category for household needs and a robust supply chain as the backbone, targeting the sinking market. The "sell-to-pick" model can better avoid the duplication of distribution, reduce the pressure on shops' inventory and, to a certain extent, reduce the rate of goods loss.

**CLASSIFICATION OF NEW BUSINESS MODELS OF FRESH FOOD E-COMMERCE**

	O2O PLATFORM MODEL	FRONT WAREHOUSE MODE	TO STORE + TO HOME MODE (STORE-WAREHOUSE INTEGRATION)	COMMUNITY GROUP BUYING MODEL
INTRODUCTION TO PATTERNS	The platform cooperates with offline supermarkets, retail stores and convenience stores to provide consumers with home-based services	Deployed warehouses that integrate warehousing, sorting, and distribution in the place closest to the user, shortening the distribution chain and reducing the cost of e-commerce distributor	In-store consumption + online shopping + timely delivery, providing online and offline integrated consumption experience	The group buying platform provides product supply chain logistics and after-sales support, the head of the group is responsible for community operations, and users pick up products in the community
LAYOUT CITY	Mainly in first-, second- and third-tier cities	Mainly in first- and second-tier cities	Mainly in first- and second-tier cities	Tier 2, 3, 4 and 5 cities
COVERAGE	1-3 km	1-3 km	1-3 km	500 meters - 1 km
DELIVERY TIME	1-2 hours	30 minutes - 1 hour	30 minutes - 1 hour	1-2 days
REPRESENTATIVE ENTERPRISE	 	 	  	 

## 4.2.2 Interview&findings

In order to gain a comprehensive understanding of the online fresh food buying experience, a total of twelve people were interviewed for this in-depth study. There were ten fresh food buying users (four in-depth users, four regular users, one user who abandoned the product after using it, and one user who had never used it before), one industry expert in the e-commerce fresh food industry, and one courier.

### Guideline of interview with customers:

A search list of the interviewer's overall profile (what city do you live in, what area within the city, what do you do, what is your usual work situation like)

What is the approximate size of your daily life, does your neighbourhood meet your daily needs, how does it affect you if it is too big or too small?

Is it easy for you to shop for fresh produce in your neighbourhood?

When did you start using fresh produce e-commerce platforms, what type of fresh produce e-commerce platforms do you use, and how often do you use it? Emergency? Daily?

> Why don't you go to a fresh produce store? What makes you choose between fresh produce e-commerce platforms and brick-and-mortar shopping?

> What motivates you to use fresh produce e-commerce platforms more often, and why do you prefer fresh produce e-commerce platforms over brick and mortar?

What do you think are the aspects that you care more about when you use fresh produce e-commerce platforms for your grocery shopping?

Did the epidemic impact your fresh food shopping, for example, if you stayed at home and started to buy your food because of the epidemic?

What do you think is the difference between fresh food e-commerce and general online shopping and takeaway, and how does this affect you?

What are the problems with the current fresh food e-commerce service model, and what could be improved for you?

The data from the previous research and questionnaires indicate that most people are dissatisfied with the fresh food delivery section. Have you encountered similar problems and what is your opinion?

### Findings:

Here, I have taken a selection of interviews from different users as findings.

### Customers part:

*Interview one:*



*User: JIANG*

*Job: Psychological counsellor*

*Daily habits: I like to cook, I make my own gym meals, and I go shopping for fresh food regularly.*

*Area: Non-core area of Hangzhou. There is no fresh food supermarket nearby, even the nearest one is two kilometres away.*

Jay: How often do you use fresh food e-commerce apps and what type of fresh food e-commerce platforms are you using?

JIANG: I'm actually a big fan of cooking and do it quite frequently. But before



I lived in an area where it was easy to buy both fresh and regular food, and the surrounding facilities met my needs perfectly, so I didn't use fresh food e-commerce apps much at that time, at most I just used it to place an order for emergencies when I forgot what to buy sometimes. But I recently moved and the nearest supermarket is two kilometres away, so I'm thinking of going back to using the fresh produce app for my daily grocery shopping.

Jie: What motivates you to use fresh produce e-commerce platforms more often, and why did you choose fresh produce e-commerce platforms when comparing it with brick-and-mortar shops?

JIANGL: The main reason is the convenience. I tend to remember what I want to buy when I go to the shop, so I inevitably forget something, so I just use the fresh produce app to make up for it.

Jay: Did the epidemic have any impact on your fresh food shopping?

JIANGL: I used to go to food markets or supermarkets to buy food before I moved, but once it became a medium to high risk area, I couldn't go there anymore, so I had to choose to place orders online and wait for delivery. Strictly speaking, that's the time of year that is most frequently used.

Jay: What do you think is the difference between fresh food e-commerce and general online shopping and takeaway, and what is the impact of this difference on you?

JIANGL: One is the timeliness, I can accept the speed of fresh food e-commerce is about half an hour like takeaway, if I have to wait for a day or two as long as express delivery, then I can't imagine.

Jay: What are the problems with the different fresh food e-commerce service models that are available to you now and what could be improved?

JIANGL: In terms of my usage scenario, there are actually two kinds of scenarios, one is when I'm washing dishes at home and suddenly I want to buy something, so in an emergency scenario I need it to be delivered to me fast enough. The other scenario is when I have to buy a lot of things and stock up on them, so I want it to be delivered to me. In both cases, it's best to have the goods delivered directly to me.

Jay: The preliminary data shows that most people are dissatisfied with the delivery stage of fresh produce, have you encountered any similar problems?

JIANG: I understand that it's actually because of the delivery problem, many of the delivery staff are actually informal, which leads to the possibility that the process of delivery is not properly preserved, plus the possibility of delivery is directly hanging on the door, hanging on the door and I don't know how long it's been hanging, that the dish may start to rot, then we get the dish when it's definitely not comfortable. For example, I need to buy chilled chicken breasts on a daily basis because I work out, and once I placed an order and didn't hear it when it was delivered because I was cooking in the kitchen, so the delivery guy helped me put a big bag of chilled chicken breasts on the door, and then when I was all done, I remembered it and when I went to get the chicken breasts again, they had melted a lot and water was running all over the place. I'm sure I'm to blame for this, but there are many times when people are not at home after we place an order, but the fresh bags used in the delivery process don't allow for complete chilling, so the fresh goods ordered are off-fresh, which is really bothers me.

*Interview two:*



*User:ZHANG*

*Job: studying for a master's degree and working*

*Status: Newly married and have just had a baby. The child's grandmother is coming to live with her and help look after the child, as ZHANG and his wife are*

*both working.*

*Area: remote area of Guangzhou, but there is a shopping area around*

*Habits: ZHANG will discuss what to eat the afternoon before and place an order for the next day.*

Jay: When did you start using fresh produce e-commerce platforms, what type of fresh produce e-commerce platforms did you use, and how often did you use them?

ZHANG: I used seven different fresh produce apps, but I ended up with two that I use most frequently, both of which deliver the same day or the next day after I place an order. Because my family eats for four people every day, the volume is relatively large, and the demand is relatively stable, so using grocery apps to buy groceries is a daily occurrence in my family.

Jay: What motivates you to use fresh produce e-commerce more often, and why did you choose fresh produce e-commerce platforms when comparing it with brick-and-mortar shops?

ZHANG: The first one is because of the price, sometimes there are some special offers on fresh food e-commerce platforms, the second one is because of the relative convenience, because my family has a child who can't live without us, and the convenience of using fresh food e-commerce delivery is also essential for us. The third one is quality.

Jay: What do you think is the difference between fresh food e-commerce and general online shopping and takeaway?

ZHANG: The fresh food I use is actually like a takeaway. Jingdong Home Delivery helps me buy fresh food from a nearby supermarket and then delivers it to my home. The difference between fresh food e-commerce and online shopping is the timeliness, one arrives the same day/next day, and the other may take a few days.

Jay: What are the problems with the different fresh food e-commerce service models, and what could be improved for you?

ZHANG: No model is the best for me, only that which is the most suitable for me. I don't really need the vegetables I ordered for the next day to be delivered to me today. I just need the vegetables to be delivered to me

before I cook the next day. So, different fresh food service models are for other users to choose from, and it's just a matter of picking the one that suits you best.

Jay: The preliminary data shows that most people are dissatisfied with the delivery stage of fresh food. Have you encountered any similar problems?

ZHANG: Actually, I don't think there are many problems in this area. It's mainly because I had similar issues a long time ago, so I just avoided buying frozen goods, goods that require a lot of freshness, etc. But if there were a solution to the problem of not being able to keep things fresh all the time or to deal with unexpected situations, I would still be willing to use a fresh food store to buy the food I need.

**Below is a transcript of some important information from the interview:**

*User: ZING*

*Job: Internet company's Product Manager*

*Status: Working everyday, now applying for master's school at home*

*Location: Remote area of Shanghai, no big business district around*

*Daily life habits: When I was at home, my mum and dad always cooked, but after I came to Shanghai to work, I need to cook by myself*



Jay: Why did you go to a fresh produce store instead of a food market?

ZING: I don't know the price of vegetables. I also heard that the food markets in Shanghai are more expensive because you are not a familiar customer. I'm also socially awkward, I don't want to talk to people I don't know well and I don't know how to bargain with the owner. And I don't really know what kind of vegetables are of high quality. Fresh food e-commerce providers are more consistent in quality, so I usually order on the app.

Jay: How does the epidemic affect fresh produce purchases?

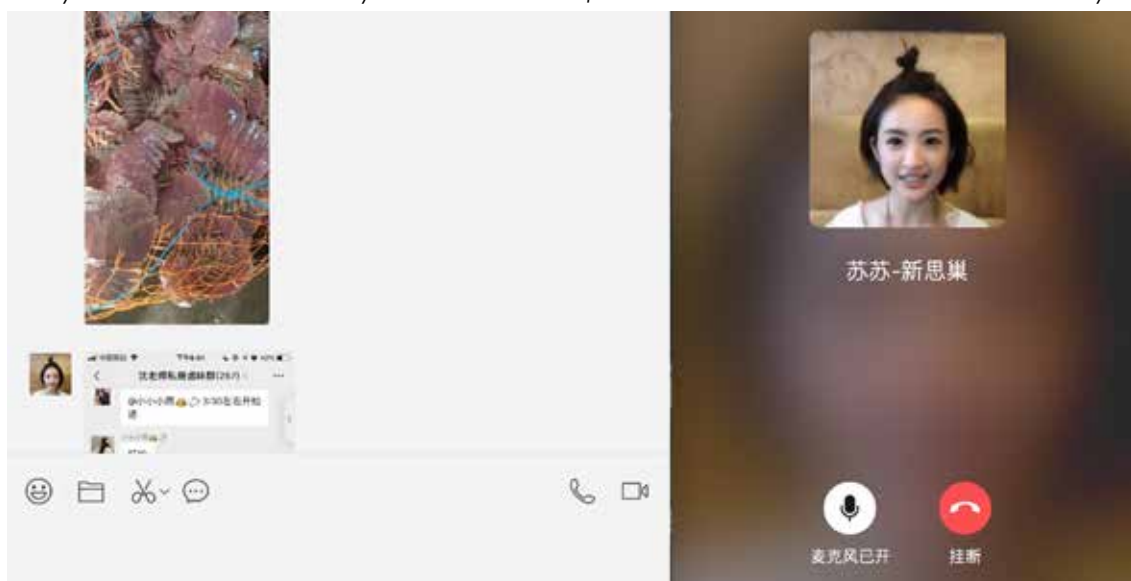
ZING: There's just been an epidemic in my city. There are two groups of relatives in my family. One group knew about the epidemic and immediately went offline to buy rice, food, oil, meat and so on. One group knew about the epidemic and immediately went offline to buy rice, food, oil, meat, etc. The other group chose to order from Walmart and have it delivered to their homes. The relatives of mine who went offline said that he felt that a lot of the meat he bought from the supermarkets and delivered to him was frozen meat and not fresh meat, so he chose to go offline to pick it up. The relative who chose to go online on the other hand thought: I don't have to go out, I can have less contact and then it's also more convenient.

User: SUSU

Status: Full time at home preparing for pregnancy

Area: remote area of Hangzhou, only small shopping areas around

Daily habits: I cook healthy and nutritious food at home, but sometimes I'm lazy



Jay: What type of fresh food e-commerce do you use, and how often do you use it? Emergency? Daily?

SUSU: I don't use many of the mainstream fresh food merchants, but I have something I want to share with you. We have a self-buy group in our neighbourhood, which is where one of the owners herself will talk about what she has cooked today in the group, and then we will all go to her to get it. Sometimes she also has some fresh vegetables and fruits, I've gone to her a few times before to buy strawberries, and the quality is much better than what's out there. The quality of the food that was cooked was also excellent, mainly because he was also a homeowner who lived in the area, so we were comfortable with the food safety issue. But then gradually find her to buy a lot of people well, so sometimes we have to go to pick up, which is quite troublesome, we such lazy people just do not want to go out, you know that

User: YANG

Work: White-collar

Area: Yubei District, Chongqing, convenient shopping around

Daily life habits: daily use of fresh food e-commerce to buy fresh vegetables, every day to at least one meal will be cooked by themselves, the quality of the meal requirements are very high



Jie: The paper data from the preliminary research and questionnaires indicate that most people are dissatisfied with the fresh food delivery section. Have you encountered similar problems, and what are your views on this?

YANG: I've used many different apps to place orders, and sometimes there are problems with fresh food delivery, and they vary from one e-commerce company to another. For example, the price is low, but once the beef I bought was smelly when delivered. There is also the problem of delivery and storage. Many of them are not delivered to my home in Chongqing, or I have to go to the shop downstairs to pick them up. I buy vegetables and meat, and I often need to keep them fresh, but the shop downstairs doesn't care what you buy and just leaves it there, so the meat I bought went bad a few times. There is also a small shop that will keep my food fresh, but there is another problem, there are a lot of dishes that can be stringy, they just put all the dishes in the fridge, and when I take them home to cook they are very stringy. How can we be satisfied with such a problem?

### **Takeaway staff part:**

*Takeaway: WANG*

*Region: Hangzhou*

Bullet points:

The orders sent by the delivery platform are very urgent, for us time is money, seize the time to run a single order to earn single more money, so all the orders are delivered as soon as possible.

When we deliver fresh food, we use the same box for takeaways. If there are items that need to be frozen, simply add an ice pack to the delivery box. In my case, it's not bad, but some takeaways don't even have a takeaway box; they just send it in a plastic bag, so it's normal for the goods to be a bit melted.

Many of us send several orders together when we deliver, some of which I have to deliver to the door, which takes up a lot of our time, so it's better for us to put it downstairs. Sometimes there are a lot of orders, and some people are far away, so sometimes it's normal for them to be delivered over time.



**Industry experts part:**

*User: SUN*

*Profession: Designer at Fresh Hema*

*Status: busy with work on weekdays and her own things on weekends*

*Location: Shanghai, next to a busy shopping area*

*Habits: I go back and forth between my home, gym and work every day. Cooks my own food, occasionally take away.*

Jay: When did you start using fresh food e-commerce platforms, what type of fresh food e-commerce platforms do you use and how often do you use them?

Sun: I use it two to three times a week, and it's become a daily routine for me. I've actually used other companies' fresh food e-commerce platforms, but I don't find it very acceptable for me to have to wait longer or to go out and pick up the food.

Jay: What prompted you to use the fresh food e-commerce platform regularly and the fresh food e-commerce platform and the brick and mortar shops to make a comparison? Why did you choose the fresh food e-commerce platform?

Sun: The first point is convenience; there is a point here that you may not notice. For girls, going out to the market to buy food and going to the pick-up point outside means I have to change my clothes, go downstairs, and probably put on makeup. At the same time, delivery to the floor or home delivery eliminates these steps, which are invisible time costs. The second point is that it saves time. I'm a small girl, and often, when I go out to buy a large watermelon or a carton of milk, it's heavy for me to carry it back myself, but home delivery saves me the trouble. The third is that I am also very comfortable with the after-sales service on our platform, as I get an instant refund for any bad purchases.

Jay: What do you think is the difference between fresh food e-commerce and general online shopping and takeaway?

Sun: In terms of the products sold on the platform, the fresh produce platform sells more of the necessities of life, while the general online shopping platform sells more of the items that add to life. From a business point of

view, it's not about whether it's sold on the internet or not. The cost of transporting and preserving fresh produce is much higher than general merchandise, and the losses are also much higher. I don't need a high learning cost to use fresh produce; I already have a fundamental understanding of the product being sold. I need to place an order, but with other e-commerce products, I need to see what other people are saying about the product.

Jay: The preliminary data shows that most people are dissatisfied with the delivery stage of fresh produce. Have you encountered any similar problems?

Sun: The problem of delivery is probably more related to other platforms, as many other e-commerce platforms are more platform-based products; riders also have a problem with the randomness of delivery. There is a strong correlation between this and the riders' density and whether they are at peak meal times. Fresh Hema is store-based, which means you can't order unless you're within three kilometres of the shop, and we have our delivery staff, equipped with a lot of freshness and cooling facilities for transport, which solves these problems to a great extent.

Jay: As the platform designer, what else would you like to say?

Sun: When users choose a fresh food e-commerce platform to buy fresh food, the quality of the goods is actually out of their control. You can't be sure of the quality of the delivered fruit, but you can choose every one of them when you go to the vegetable market. Fruits and vegetables, fresh e-commerce is to exchange uncertainty for cost.

From a business point of view, we think more about how to balance these factors: "the last mile of delivery", "the service that the user needs", "the price I have to pay." This leads us to want to achieve the highest level of satisfaction at a lower cost.

Each type of fresh produce is stored at a different temperature. For example, tropical fruits are stored at a higher temperature, while carrots must be kept at 0°C to 4°C. The current difficulty in controlling cold chain distribution is chilled products, which are kept at -2°C to 2°C, where the growth and reproduction of most microorganisms can be inhibited, and the rate of toxin secretion by pathogenic bacteria such as *Clostridium botulinum* and *Staphylococcus aureus* is reduced. Once the cold chain is broken and the ambient temperature rises, bacteria will multiply faster and spoil above 5°C.

### 4.2.3 Summary

- The inadequate solution for the last mile of the fresh food cold chain is the main reason why users are not satisfied with the fresh food e-commerce shopping experience.

Reasons for user dissatisfaction include

- Food that needs to be kept fresh throughout the process is not kept fresh throughout.
- Fresh food e-commerce platforms that deliver to your door may not be fast enough.
- Fresh food e-commerce platforms that deliver to the site have problems with small stations not being responsible for sorting and preserving fresh food.
- The fresh food e-commerce platform does not do an excellent job of reassuring consumers about purchasing items that require strong freshness and cold retention.
- Some users have the problem of not being able to conveniently buy their favourite fresh food items because the businesses around them are not on the fresh food e-commerce platform.

Problems with takeaway staff include.

- Not everyone is equipped with a takeaway box specifically to deliver fresh food that needs to be kept fresh and cold.
- It takes a long time to deliver everything to your door, leading to overtime and low income for you.
- It is easy for a delivery person to overstay his or her time if the delivery is too far away.
- Delivering over time will result in lower earnings.

- The low number of orders delivered per day can lead to lower earnings.
- The problem with fresh produce platforms is the cost (fresh produce costs, transport costs, short term storage costs, etc.).

005

# User Portraits



## 5.1 Fresh produce e-commerce consumers' user portrait



## 5.2 Takeaway Rider's user portrait





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# Conclusion

## 6.1 User needs

### User needs:

Fresher fruit and vegetables

Lower prices for goods

Can buy vegetables during an pandemic

Shorter, more certain delivery/pick-up times

Can do one-stop shopping (everything can be guaranteed to be available on the same platform)

Products that need to be kept fresh and frozen can be cold-chained throughout to ensure freshness.

A more convenient and faster shopping experience

Guarantee the safety of goods and themselves in all circumstances (contactless delivery)

### Needs of the takeaway riders:

More efficient delivery of orders

Can spend a reasonable time on each order, rather than waiting for the delivery to be dispatched and picked up by the customer

The desire to be able to deliver to the exact location, rather than wasting a lot of time trying to find the precise location of the delivery location each time

Ensure safety during the delivery process (contactless delivery)

Have the tools to keep fresh and cold to achieve the required entire cold chain

Need for a higher price per customer

Delivering in a small area to prevent one order from taking a long time to arrive

### **Needs of fresh produce merchants:**

Reduce wastage rates

Reducing costs (including fresh produce procurement costs, operating costs of the model, offline warehouse or storefront costs, etc.)

Reducing wastage in transit for takeaway riders

Increase delivery efficiency of delivery riders

Increase the number of users and frequency of orders

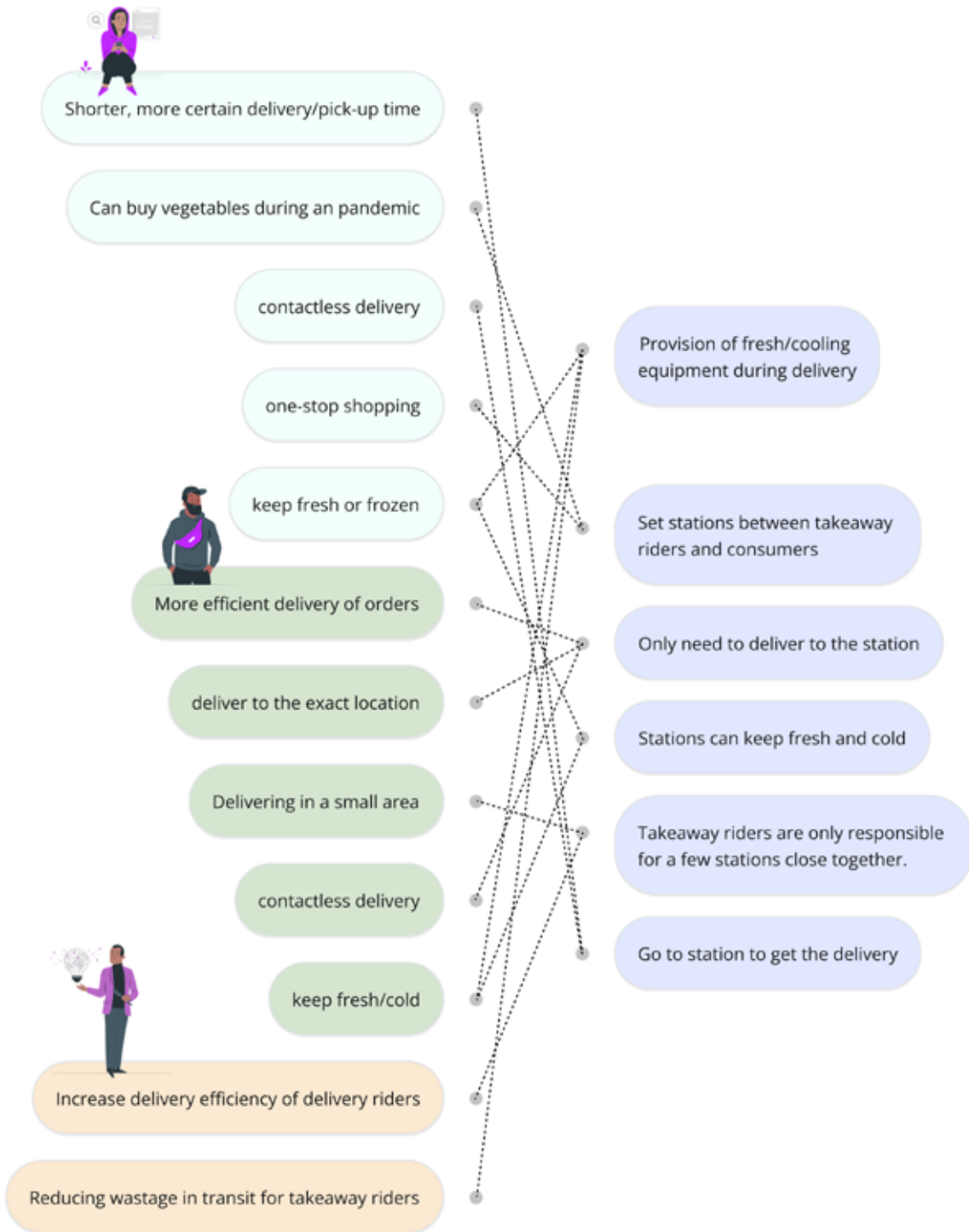
## **6.2 Design opportunities**

According to the preliminary research, the users' pain points are mainly in the delivery stage after the order is placed and after the delivery. So the main problem I wanted to solve was the delivery phase after the online fresh food purchase was completed. This is mainly divided into the delivery process problems (slow speed or lack of freshness preservation methods, etc.) that lead to poor user experience, and the delivery stage problems (unsatisfied with the fresh goods or unable to pick them up when delivered for various reasons) that lead to poor user experience and low efficiency of the courier rider's delivery.

Difficulties/User needs



Opportunities







007  
Target



## 7.1 Target

**The solution to the problem of grocery shopping for young and middle-aged people living in the big cities.**

In my preliminary research, I found that among the existing ways of buying fresh produce, whether you choose to go to the market to buy food for your home (primarily middle-aged people) or use a fresh produce e-commerce platform online to place orders at home and wait for delivery (primarily young people), you cannot achieve the convenience of buying fresh produce quickly enough to meet the requirements of a 15-minute urban living circle. With the rapid development of the internet and infrastructure, more and more people are choosing to shop online (especially the growing number of people choosing to buy fresh food online). Meanwhile, in China, the new crown epidemic is still recurring, and under the epidemic, the lockdown in some parts of the major cities has made the supply of fresh food the most significant issue of the day. The high population density and mobility of the population in cities means a high demand for fresh food even when there is a lockdown. In China's major cities, it is clear that this demand cannot be met, and the problem of grocery shopping has arisen. The main aim of this article is to solve/alleviate this problem.

**Realising the desire of grocery shoppers to have "quality fresh food in 15 minutes".**

A 15-minute city needs to have a wide range of infrastructure within a small circle of people, and it is clear that China's big cities are not doing a good job of providing primary fresh produce: some are lacking in infrastructure; others have markets/supermarkets in their vicinity, but the quality of the produce is poor, or they are cheating customers. If you choose to buy online, you are likely to encounter situations where the quality of the food is not guaranteed (e.g. items that need to be kept chilled are thawed in transit and the quality is reduced), so a new system is needed to enable consumers to buy food quickly and satisfactorily.

**Improving the efficiency of delivery for takeaway riders who deliver fresh produce.**


In addition to consumers, there is also a very large group of delivery riders in large cities. So while we need to create a better experience for consumers, we also need to consider the essential part of the delivery system - the delivery riders. For delivery riders, the most significant demand is to deliver more orders per unit of time and earn more money. This requires an increase in the rider's delivery of fresh produce efficiency. There are two main reasons for the inefficiency of deliveries today; one is that individual orders take a long time (one order travel a long way and need to be found and delivered to the customer), and the other one is that multiple orders are confusingly delivered. This requires a more precise scope of work for each delivery rider while allowing them to deliver to a defined location, significantly improving the efficiency of the delivery rider.

**Make it a no-touch process of "buy-deliver-pickup".**

Although the epidemic is generally under control in China, the prolonged and repeated outbreaks have made the government and the people very nervous about the epidemic becoming severe again. This has led to high demand for social distancing and avoidance of all contact. There is a particular risk of viruses being present in fresh food, and takeaway riders are a constant source of instability. With this common belief, the best thing to do is to be able to buy-deliver-collect without contact.



## 7.2 Persona



**Xu dandan**


📍 Demographic

Age:	25
Gender:	Female
Location:	Shanghai
Marital status:	Single
Occupation:	Designer
Income:	~12000RMB


Online purchases

80%

Technology



Channels



📍 Needs

- Place orders in advance.
- Ready to pick up and enjoy the order.
- No need to wait at home all the time for your fresh goods to be delivered.
- A place to store fresh goods and keep them fresh for a while.

Dandan is a young designer who lives on the outskirts of Shanghai. She lives on her own and rents a newly built flat. She usually chooses to shop online as it is not convenient to buy fresh produce around her. However, because of the distance she lives in, she usually has to wait a long time for her fresh produce to be delivered, and she has to stay at home during the waiting time, which bothers Dandan a lot.



Wang wen

### 📍 Demographic

Age:	55
Gender:	Male
Location:	Shanghai
Marital status:	Married, has one grandson
Occupation:	CEO
Income:	~62000RMB

### Online purchases

40%

### Technology



### Channels



Wen is the company owner and lives in a central location in Shanghai. Before the pandemic, there was a maid who went to the market every day to buy food. Due to the pandemic, the maid was not able to return to Shanghai. As wen is very busy at work, he has to try to buy fresh produce on his own using a fresh produce e-commerce platform.

### 📍 Needs

- The requirement is to be able to save time.
- High-quality requirements for fresh goods.
- Expect contactless delivery to ensure the safety of himself and his fresh goods.
- Want the freshness of the fresh produce to remain at its best when he get it.



# 008 Related products and technologies

## 8.1 Existing product analysis

Now the fresh food e-commerce market does not appear entirely new for the fresh product delivery product system, so in doing the relevant product analysis, the text is selected from the takeaway industry relevance of the two highest products: takeaway insulation box and intelligent takeaway temporary storage cabinet.

### 8.1.1 Takeaway insulated boxes part:

**Common sizes:**

Capacity 30L.

Box outer diameter: 40cm long, 27cm wide, 30cm high

Box inner diameter: length 38cm, width 25cm, height 28cm

Capacity 62L.

Box outer diameter: length 50cm, width 38cm, height 38cm

Box inner diameter: length 48cm, width 36cm, height 36cm

Capacity 80L.

Box outer diameter: length 52cm, width 42cm, height 42cm

Box inner diameter: length 50cm, width 40cm, height 40cm

**Usage type:** hand carry, shoulder carry, car carry

**Price range:** tens of dollars to more than a hundred

**Common materials:** epp, double-stranded Oxford cloth, pearl cotton, environmental protection aluminium foil, etc



**Insulation and cooling power:** strong insulation ability, normal cooling ability

**Standard colours:** dark red, black, dark blue, etc

**Cross-sectional comparison:** The cold box was chosen in the cross-sectional comparison of takeaway insulation boxes. Obviously, the cold box can provide better cold retention and is more suitable for fresh food delivery. But at the same time it also has a lot of problems: size (the general size of the market is too small to meet the needs of fresh delivery), price (compared to most of the current tens of dollars of takeaway boxes, the cost of the cold box is relatively high, reaching hundreds of dollars), range (the cold box is only valid for 6-8 hours, for 10-12 hours of work is far from enough for the takeaway staff), self-weight Problems (the cold box is physically isolated plus built-in ice bags to keep the cold, which will lead to the weight of the box is hefty).



**Overall assessment:** More takeaway boxes on the market now are designed for insulated takeaways. The double-layer design is designed to prevent better heat convection, which also applies to the keep-cool scenario. But other methods: such as the aluminium foil liner to reflect heat and the dark outer packaging to absorb the heat of light to keep the internal temperature cool, do not help keep the cold in.

## 8.1.2 Smart takeaway counter part:

### SWOT Analysis:

#### (i) Advantages

1. The fast pace of the city, the "lazy economy", and the repeated epidemics have driven the development of the takeaway industry, the increase in the speed of takeaway staff has been unable to keep up with the growth rate of takeaway orders, smart takeaway cabinets as the "last mile" solution has been

widely Smart takeaway counters have become widely available, even in short supply.

2. Improving the efficiency of delivery for takeaway riders.

#### (ii) Disadvantages

##### 1. High cost

Smart takeaway counters have high landing costs, including initial R&D or acquisition costs, operating costs and maintenance costs.

##### 2. Single profit point

The main income of smart takeaway cabinets includes delivery of meals by takeaway staff, merchants, advertising income, a single point of profit, not diversified enough.

##### 3. Single point of the function

The takeaway cabinet is only designed to solve the two pain points of not having a good takeaway after delivery not being safe for personnel to touch too much, and not being able to keep warm, keep cold, and sterilize these problems.



#### (iii) Opportunities

Due to the recurring epidemic, the takeaway economy has developed rapidly, putting forward "larger capacity" and "more diverse" demands on the market, a rare opportunity for the takeaway industry and the fresh food e-commerce industry.

#### (iv) Challenges

Firstly, most of the smart takeaway cabinets only have the function of picking up meals. The c-sides cannot use themselves to achieve the second rational allocation of regional resources; secondly, smart takeaway cabinets cannot be handed over in person, and it is difficult to divide the responsibility for bad parts; finally, due to the high construction and maintenance costs of smart takeaway cabinets, it is difficult to make a profit with only a single takeaway delivery and storage service function.



## 8.2 Related technologies

### Principle of semiconductor refrigeration technology:

Thermoelectric refrigeration is a material with thermoelectric energy conversion properties, which has a cooling function when passing through direct current because semiconductor materials have the best thermoelectric energy conversion performance characteristics, so people call thermoelectric semiconductor refrigeration. Semiconductor refrigeration is based on the Seebeck effect, the Peltier effect, the Thomson effect, the Joule effect, the Fourier effect, a total of five thermoelectric effects based on the new refrigeration technology. The Seebeck effect, the Peltier effect and the Thomson effect three effects show that the electrical and thermal energy conversion is directly reversible. The other two effects are irreversible thermal effects.

#### 1. Seebeck effect

In 1821, Seebeck found that when two different metals, 1 and 2, form a closed circuit, if the temperature  $T_1$  and  $T_2$  at the joints of the two metals are not equal, then a current will be generated in the closed circuit. The temperature difference electric potential  $E$  and the temperature difference between the two joints  $\Delta T$  and the temperature difference electric potential rate  $\alpha$  of the metal satisfy the following relationship,  $E = \alpha \Delta T$ , which is the Seebeck effect.

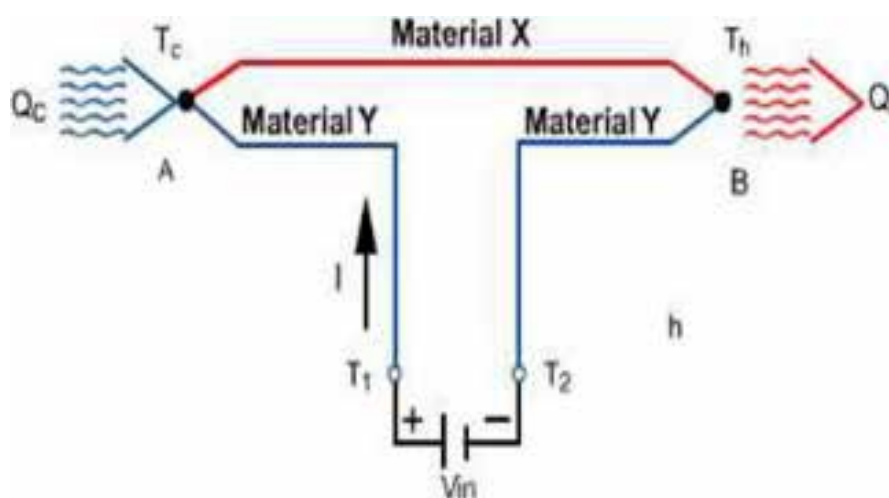
#### 2. The Peltier effect

The French physicist, Jean-Paul Parthé, discovered in 1834 that when an applied DC is flowing through a closed-circuit composed of two different metals, there will be an absorption of heat  $Q$  in one of the two joints a release of heat  $Q$  in the other joint. This absorbed or released heat is known as Peltier heat.

When the power supply is switched on, the heat at the cold end is transferred to the hot end and the temperature at the cold end decreases while the temperature at the hot end increases, known as the Peltier effect. This phenomenon did not find practical application until the development of semiconductors in modern times, with the invention of the semiconductor



cooler:



(Data source: [http://www.pengnantech.com/News\\_info.aspx?News\\_Id=478&CatId=246](http://www.pengnantech.com/News_info.aspx?News_Id=478&CatId=246))

### 3. The Thomson effect

Decades after discovering the Peltier effect, Thomson found that when current flows through a conductor with a temperature gradient  $\Delta T/\Delta X$ , in addition to the Joule heat associated with the resistance, heat  $Q$  is absorbed or released, which is the Thomson effect.  $Q$  is called the Thomson heat, and by dry, this effect is weak and negligible in semiconductors.

### 4. Joule effect

The heat generated by a steady current per unit of time is equal to the product of the resistance of the conductor and the square of the current: where  $Q_J$  is the heat generated by the Joule effect, referred to as Joule heat;  $I$  is the current through the conductor;  $R$  is the resistance of the conductor;  $\rho$  is the resistivity of the conductor;  $l$  is the length of the conductor;  $S$  is the cross-sectional area of the conductor.

### 5. Fourier effect

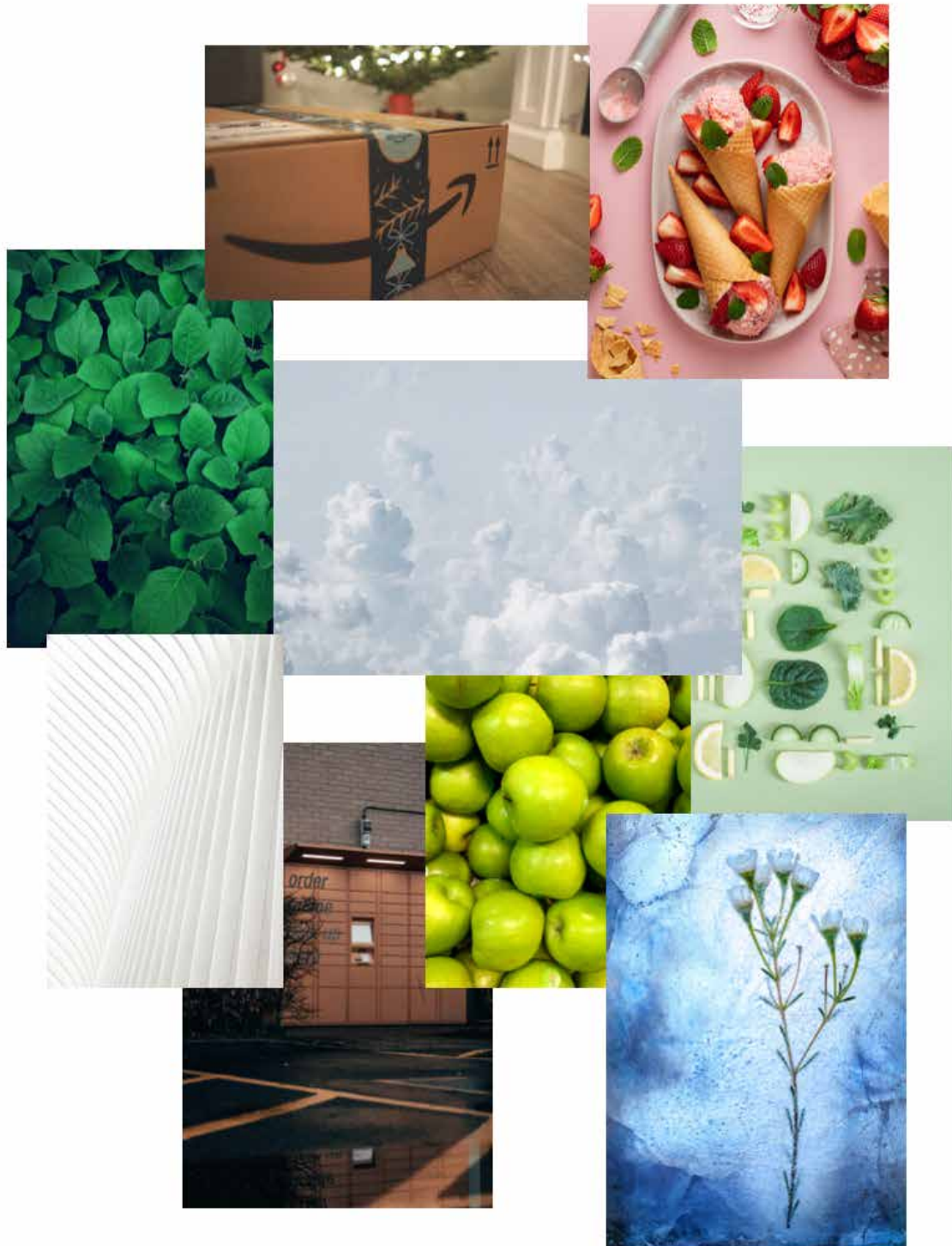
The heat conducted per unit time through a uniform medium in a particular direction is proportional to the product of the area perpendicular to this direction and the temperature gradient in that direction. Where:  $k$ ,  $K$  are the thermal conductivity and total thermal conductivity of the conductor; This is the absolute temperature of the hot end;  $T_c$  is the absolute temperature of the cold end.

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# Design process

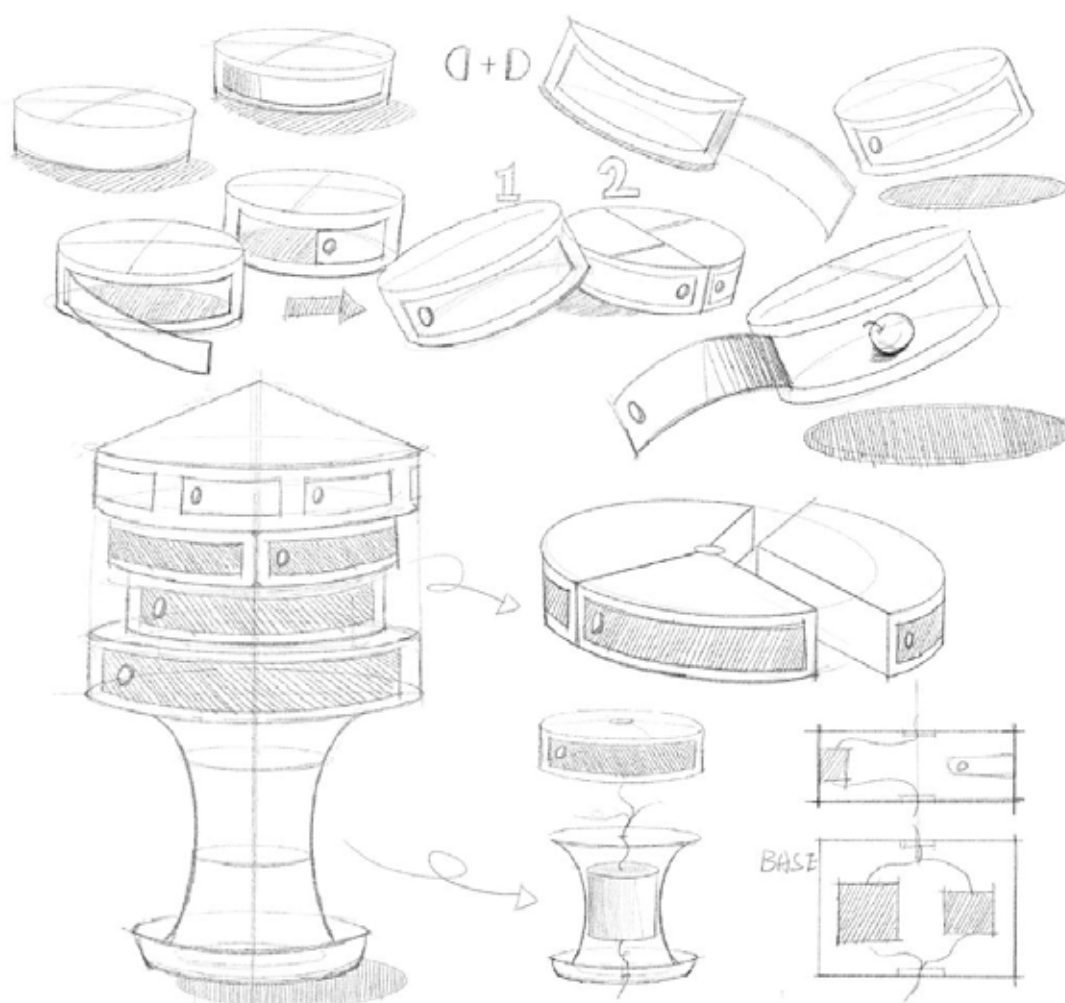


# 9.1 Moodboard



## 9.2 Concept

After previous research, I found that in order to deliver fresh produce to every resident in China's major cities within fifteen minutes, an online fresh produce purchasing system needed to be redefined. This system was designed to solve the problems of difficult deliveries by takeaway riders, inconvenient pick-ups by consumers and uneven distribution between regions. I wanted to design two products to make up this system: a redesign of the takeaway box for the takeaway rider to keep the food chilled and fresh during the delivery process, and a fresh, intelligent delivery station for the storage of fresh food to make it easy for consumers to pick up the goods and ensure that they are stored correctly. Based on the above ideas, I drew up the following sketches.





# 010 FRESHGO





## 10.1 Scenario building

There are many scenarios where the whole freshgo system can be applied. Here I will briefly list some of them as scenarios for the application of this system.

In a large city like Shanghai, the rapid development of the city and the laying of underground lines, as well as the very high prices of housing in the inner city. As a result, many young people choose to live in the suburbs of big cities, where the infrastructure is not particularly well developed, and young people are not willing to go far away to buy groceries. But the demand for fresh food still exists, and a complete online purchase - offline delivery - safe pick-up system is needed to supply it.

The second application scenario is the big cities under the epidemic. Because of the epidemic prevention and control policy, many communities are directly locked down, and people cannot go out to buy food, so they can only hope for online fresh food purchasing platforms. However, delivery personnel cannot enter the community due to the epidemic prevention and control, and the internal delivery personnel are also understaffed. This requires a sorting and delivery-self-pickup system within the community, significantly reducing the workload at the fresh food delivery stage, reducing the contact between users and the delivery personnel and increasing safety.

## 10.2 Project introduction

### 10.2.1 Scheme description

It is mainly divided into two parts: system innovation and product innovation.

In the system innovation section. After analysing the whole process of the existing fresh food delivery, I found that the worst part of the user experience was the delivery part and the pick-up part. So I redesigned the entire delivery system in FRESHGO. Before the integration, the various fresh food e-commerce platforms in the market used different delivery systems, with a variety of different delivery models that were complex and inefficient. In most cases, the delivery riders were required to deliver the fresh produce



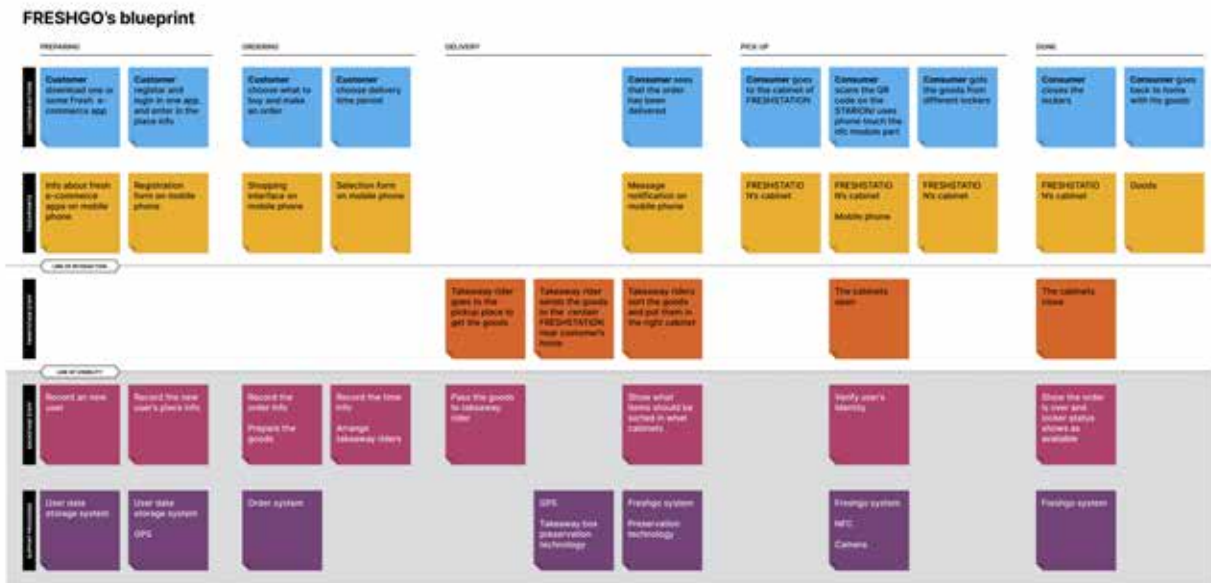
to the customer's home. For the delivery riders, this requires a lot of time spent on finding the exact location of the customer. For consumers, they have to wait for the delivery at home after placing an order. On the other hand, picking up from a downstairs supermarket or other pick-up points may not guarantee proper storage of fresh produce. With the consolidation, all fresh food e-commerce platforms have unified their delivery systems. Takeaway riders are equipped with uniform fresh food preservation and transportation box, which greatly ensures that the quality of fresh goods is not reduced due to de-cooling during transportation. At the same time, the rider's delivery destination has changed from a specific address for each household to a unified freshstation within a region. All they need to do is to store all the fresh food in an area separately according to different storage requirements, which greatly reduces the time it takes to deliver each order to different homes and improves efficiency. For consumers, they don't have to wait at home for a delivery rider to come to their home, they can simply go downstairs to freshstation and pick up their order at their leisure. The fresh products are kept in the cold chain throughout the entire process, which ensures a high degree of freshness. With the freshstation as a transit point in the middle of the process, the delivery is completely contactless, ensuring maximum safety.

The product innovation section will be explained in more detail in the following sections.

### **10.2.2 Blueprint**

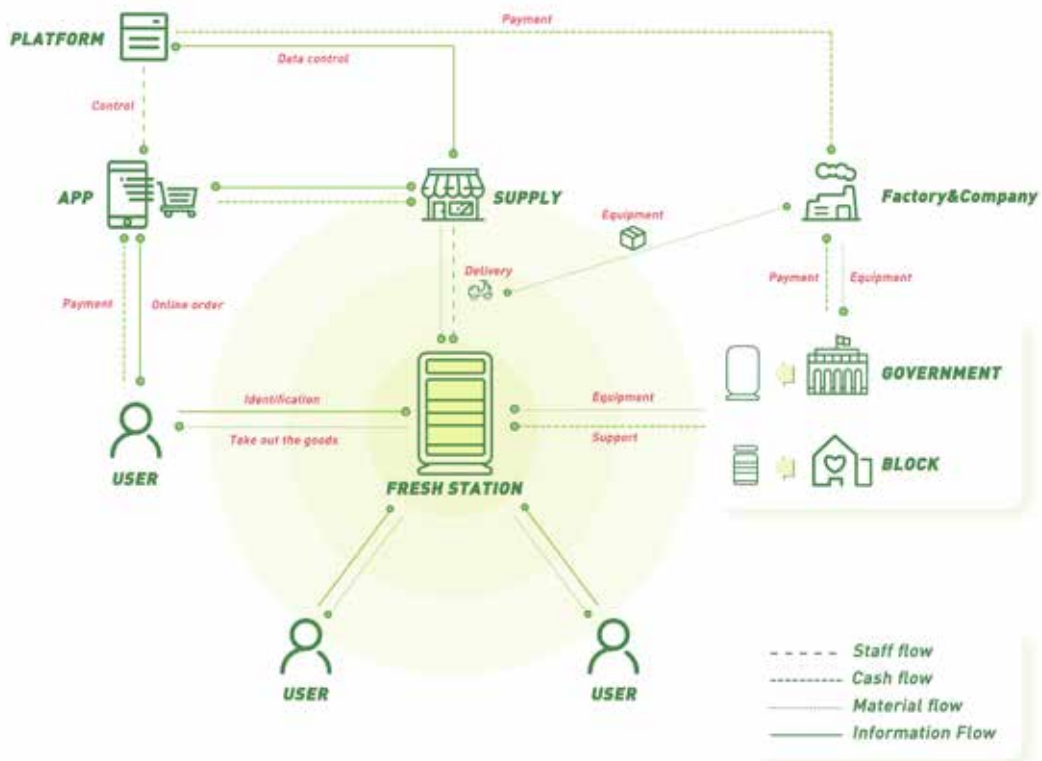
A service blueprint is a diagram that visualizes the relationships between different service components — people, props (physical or digital evidence), and processes — that are directly tied to touchpoints in a specific customer journey.

In FRESHGO's system, consumers will experience the entire process of placing an order on any fresh food e-commerce platform and then picking it up at a nearby downstairs station at the appointed time. Everything happens very simply and efficiently. The basis for this is a rigorous front stage staff and a back stage service support staff. As we can clearly see, the blueprint clearly shows how this happens.



### 10.2.3 System map

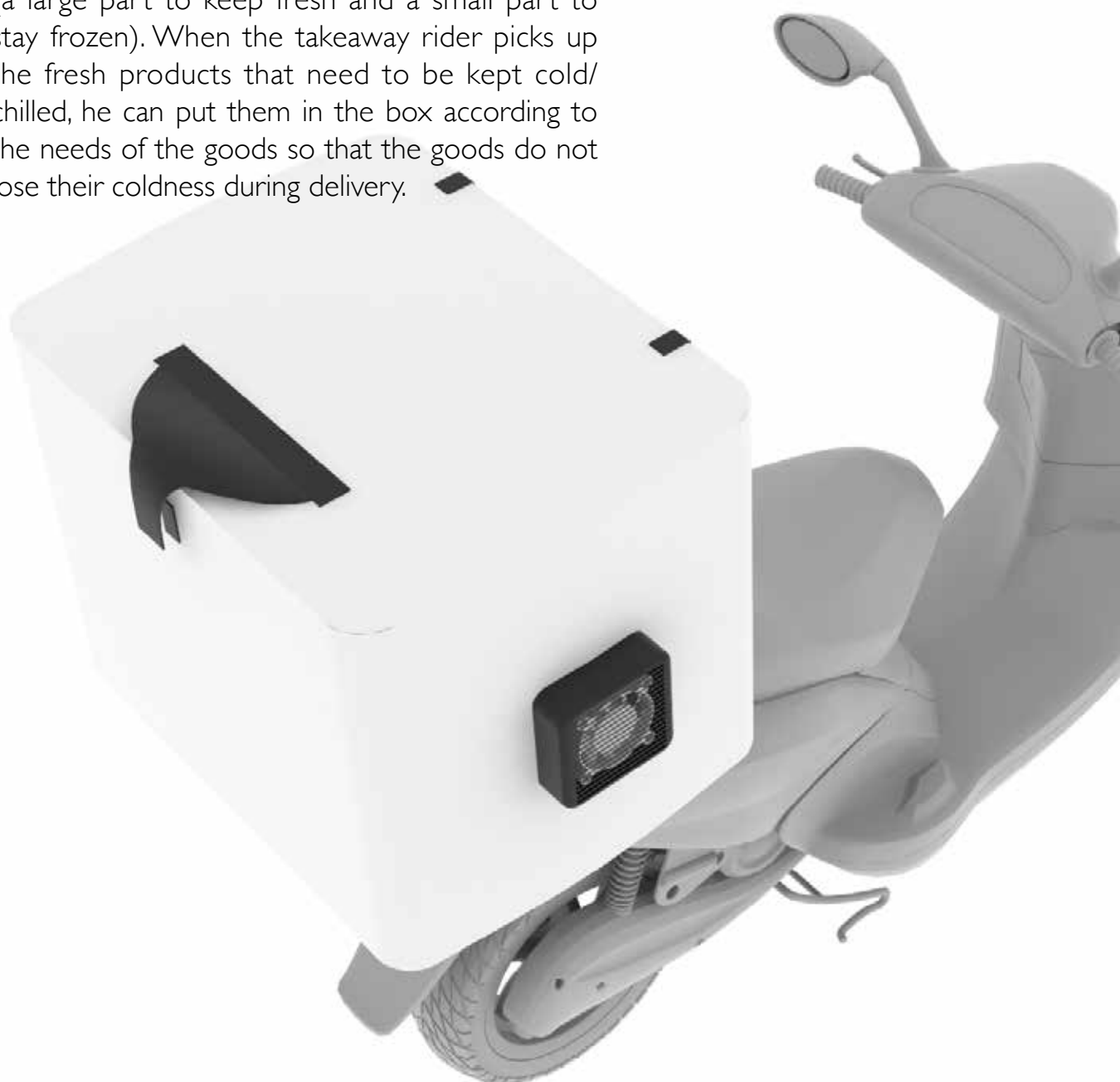
Systems mapping is the process of creating visual representations of a system's relationships, feedback loops, actors, and trends. Systems mapping creates a simplified conceptual picture of a complex system that might bring partners together for collaborative action.



## 10.3 Product part-FRESHBOX

### 10.3.1 Product description

This is the first product innovation in the FRESHGO system - FRESHBOX (the fresh takeaway crisper). Unlike the current takeaway insulated boxes, it is divided into two parts inside (a large part to keep fresh and a small part to stay frozen). When the takeaway rider picks up the fresh products that need to be kept cold/chilled, he can put them in the box according to the needs of the goods so that the goods do not lose their coldness during delivery.



### 10.3.2 Product details

#### About the parts

A FRESHBOX can be roughly divided into seven parts, each part has different function.

**Cover part** is the uppermost part of FRESHBOX. It is responsible for the two states of "on" and "off".

**Body part** is the biggest one. It is used as the container and a lot of other parts are integrated on it.

**Connect part** is the connection between cover part and body part.

**Power supply part** is the downmost part on the body, it is used for linking to electric bicycle battery and powering the entire system.

**Thermal insulation part** is one of the most important part in every FRESHBOX because it can effectively cut off heat transfer.

**Adhesive part** is the "lock" of the box.

**Active cooling part** is the most important part of the system because it can actively refrigerate to keep the temperature in the box at a low level.



## About the usage

The power supply system of FRESHBOX is directly connected to the battery of the electric bicycle. Just plug it in when you're using it, and pull it out when you're not using it.



The storage compartment of FRESHBOX is divided into two parts by partitions, one is a freezer compartment and the other is a refrigerated compartment. When there is a large volume of objects or a large number of objects need to be placed, the partition can also be removed and the entire BOX can be used as a refrigerator.

## About the CMF(Color, Material, Finish)

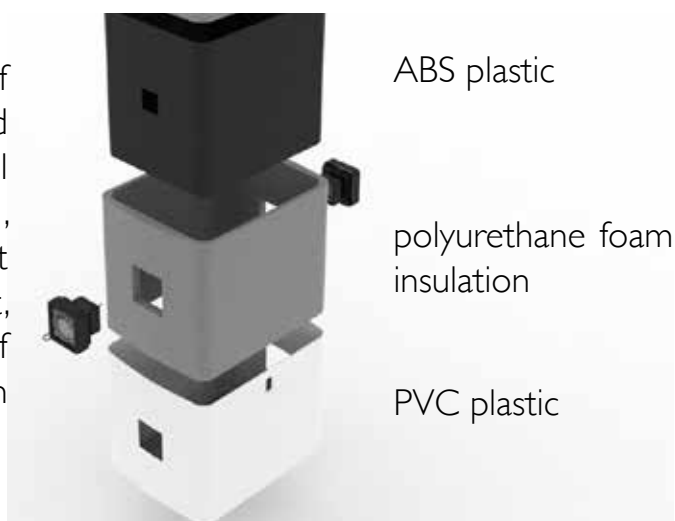
### Color part:

Unlike the dark-coloured takeaway boxes now common, the FRESHBOX is white. On the one hand, this is because it reflects the sun's heat and reduces the heat build-up inside. On the other hand, the white colour is also the colour of snow and ice, which makes it visually cooler for everyone.



### Material part:

The outer shell is made of PVC plastic (inexpensive and lightweight), the inner shell is made of ABS (non-toxic, odourless, corrosion-resistant and lightweight). In contrast, the inner shell is made of polyurethane foam insulation (good and cheap insulation).

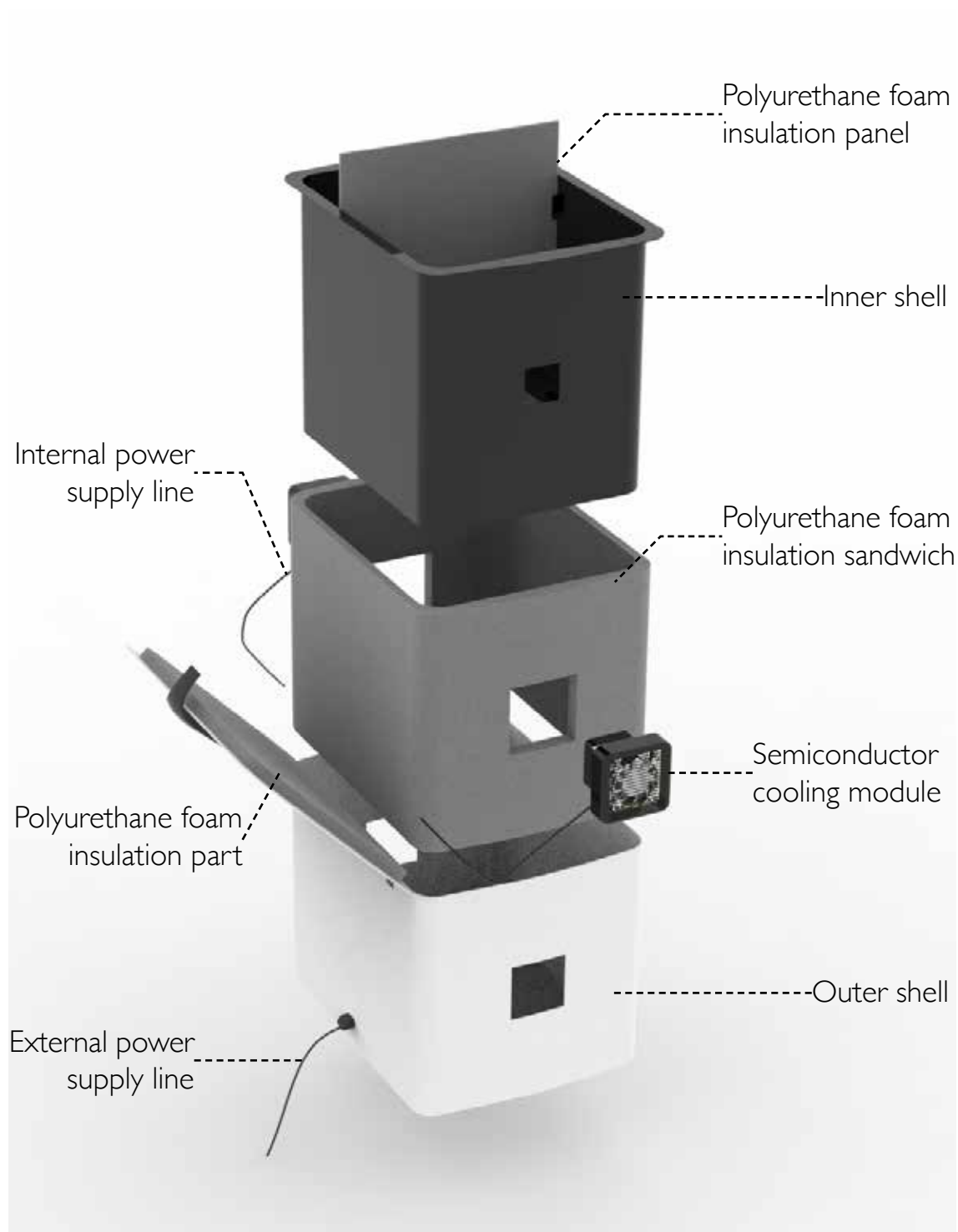


### Finish part:

In terms of finishing, the whole box process is not complicated, most of the boxes are vacuum-formed in one batch and then assembled, so there is no need for a finishing process.

### 10.3.3 Product internal structure

The internal components of FRESHBOX mainly include: polyurethane foam insulation panels, polyurethane foam insulation, semiconductor cooling modules, internal power supply lines, etc.

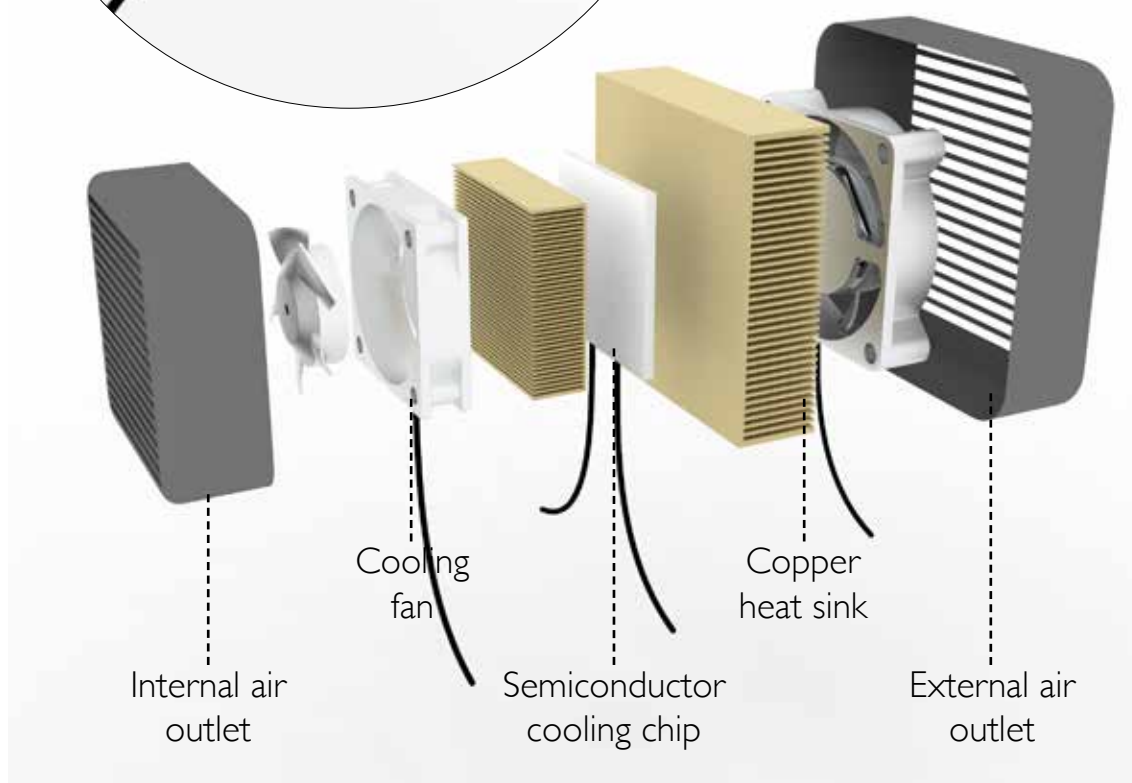




## Internal structure of semiconductor cooling module



The most important internal component of FRESHBOX is semiconductor cooling modules. At the same time, this part of the structure is more complex so I will show it in a separate exploded view.



## 10.4 Product part-FRESHSTATION

### 10.4.1 Product description

This is the second innovative product in the FRESHGO system - FRESHSTATION (the Smart Fresh Takeaway Fresh Cabinet) . Unlike the current takeaway cabinets, it offers a variety of different storage solutions that can accommodate different sizes of goods to be stored, as well as independent fresh/frozen rooms with different temperatures to meet most people's fresh goods preservation needs. At the stocking stage, takeaway riders follow the guidelines to store the goods that need to be sorted into the cabinet. At the pick-up stage, consumers scan the code to open the locker or use NFC to open the locker to pick up the goods.



## 10.4.2 Product details

### About the parts

A FRESHSTATION can be roughly divided into four parts, each part has different function.

**Central control part** is at the top of the entire FRESHSTATION. This part integrates the cooling system, the refrigeration system, etc. and is the basis for FRESHSTATION to function correctly.

**Interaction part** is part of being integrated into the base part. It is mainly used to ensure that the takeaway rider can place the goods exactly where they should be placed. It is also how the consumer interacts with FRESHSTATION to open the container and get their goods.

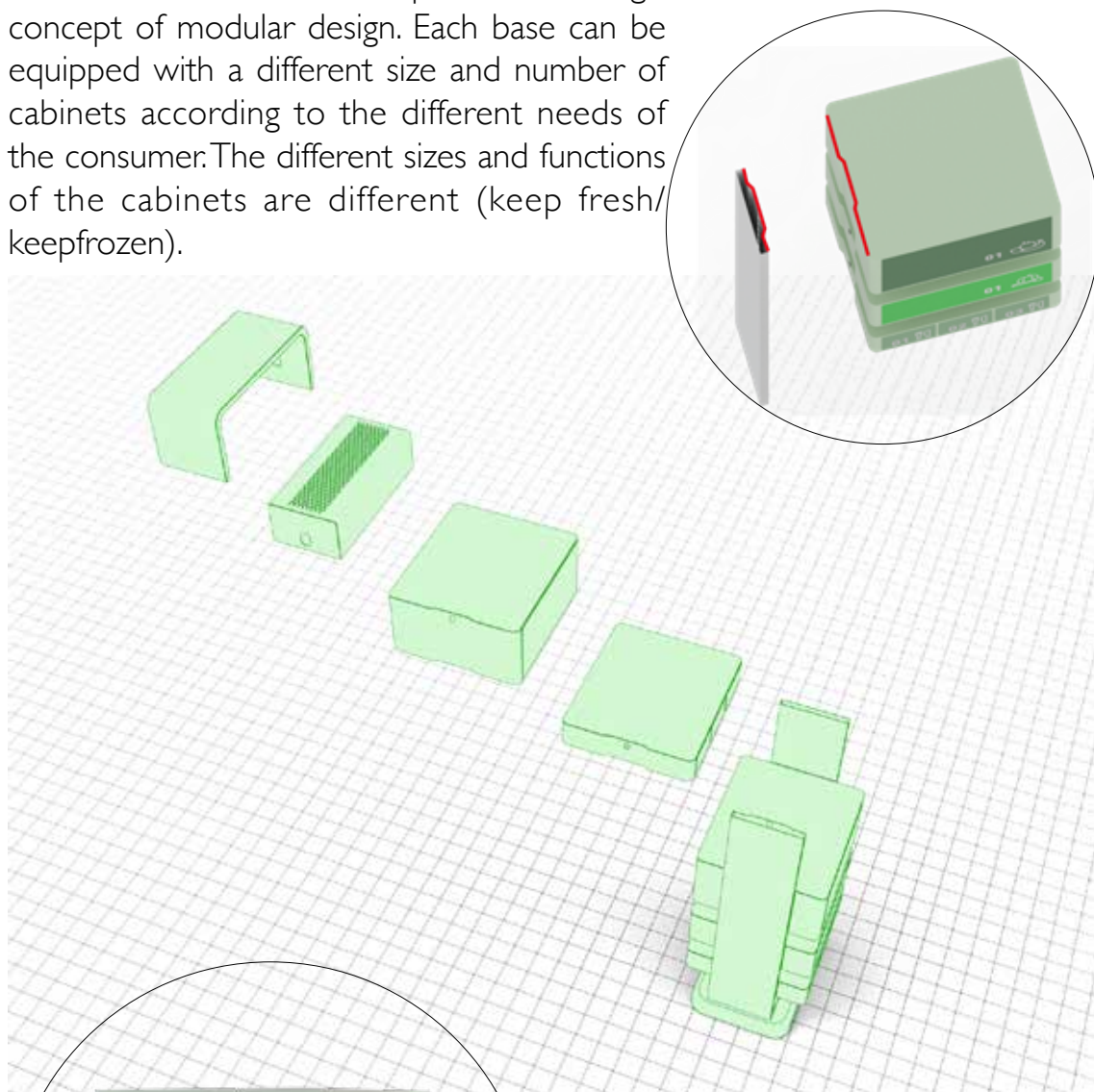
**Storage part** is the main body part to store different goods.

**Base part** is the external part of the entire FRESHSTATION. It integrates the power transmission and supply of the whole STATION while also taking into account the role of combining STATION as a whole.



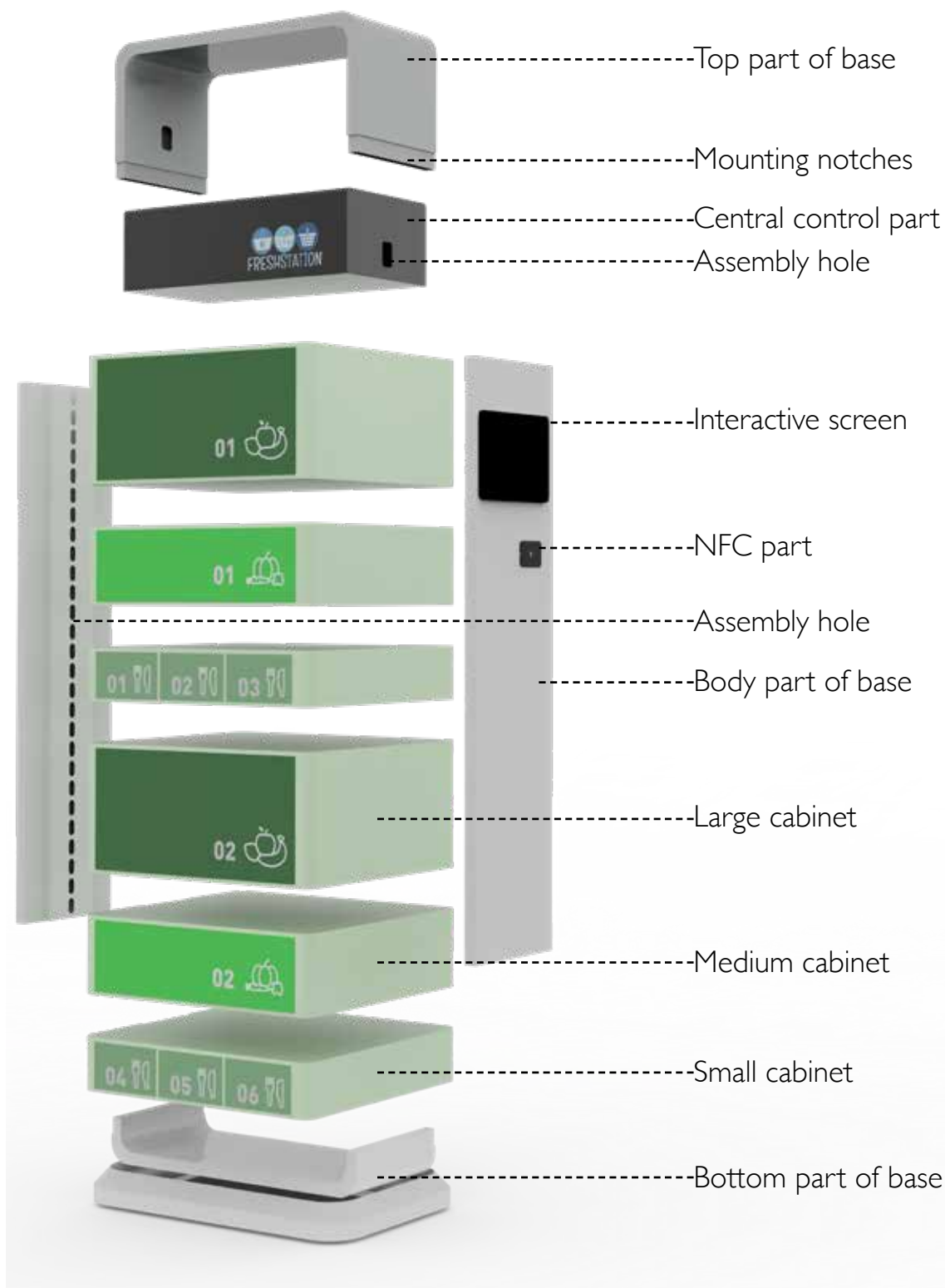
## About the usage

FRESHSTATION has adopted the design concept of modular design. Each base can be equipped with a different size and number of cabinets according to the different needs of the consumer. The different sizes and functions of the cabinets are different (keep fresh/keep frozen).



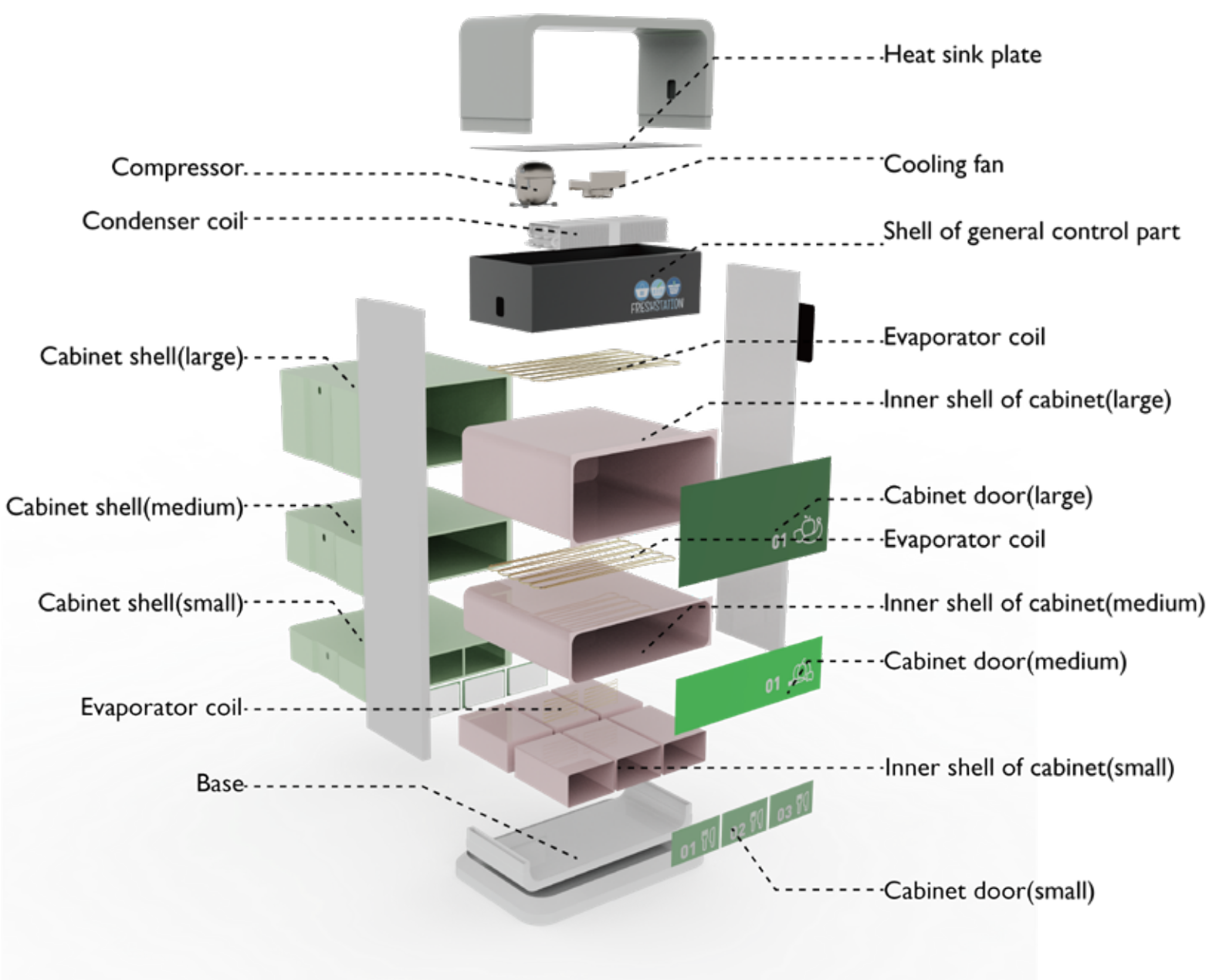
the different sizes of cabinets

About the assembly



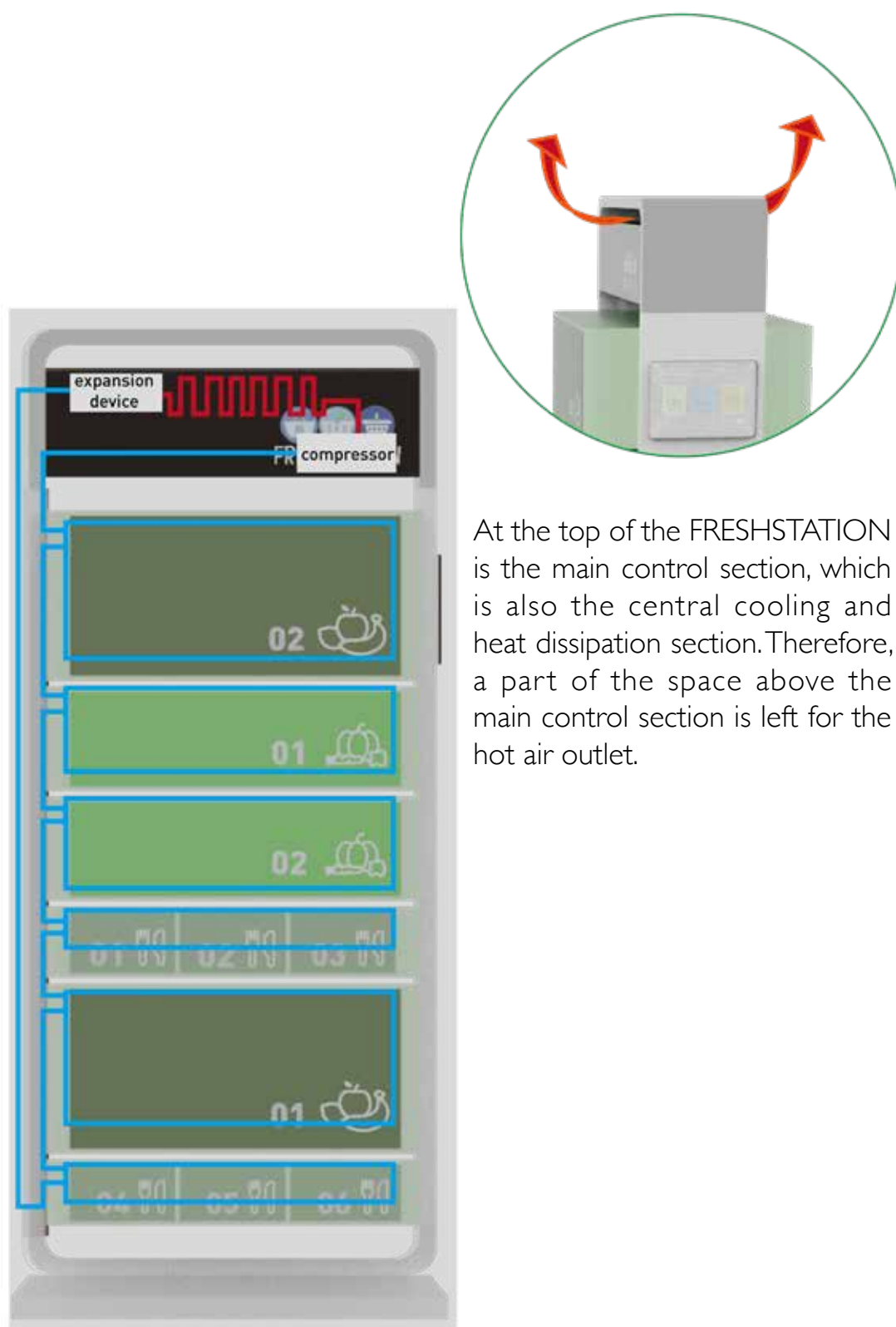
### 10.4.3 Product internal structure

The internal components of FRESHSTATION mainly include: Compressor, Condenser coil, Cabinet outer shell, Cabinet inner shell, Cabinet door, Cooling fan, Evaporator coil, etc.





## 10.4.4 Product working principle diagram



At the top of the FRESHSTATION is the main control section, which is also the central cooling and heat dissipation section. Therefore, a part of the space above the main control section is left for the hot air outlet.



## 10.4.5 Other details

### Placement

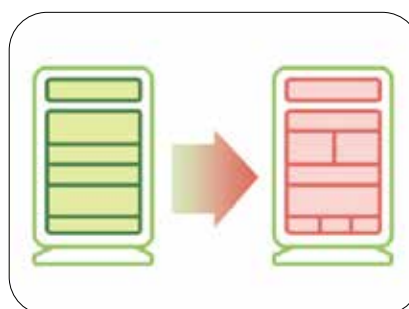
Placement is important as it determines how far each FRESHSTATION can serve. Each STATION is the core of a "15-minute city" of fresh produce shopping. At the same time, multiple STATIONS are linked together to form a fresh food supply network for the whole city.



### Development trends



The demographic of use will shift from only targeted users to a more universal audience.

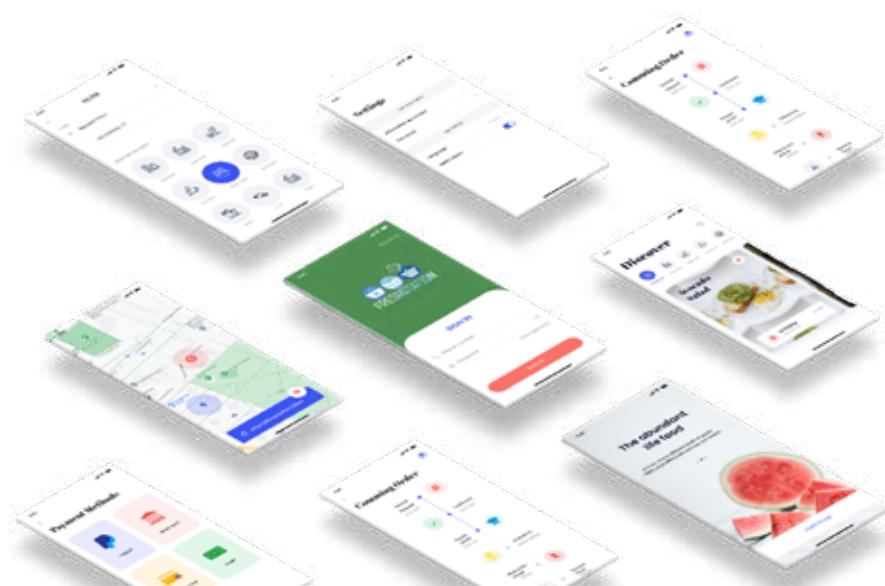
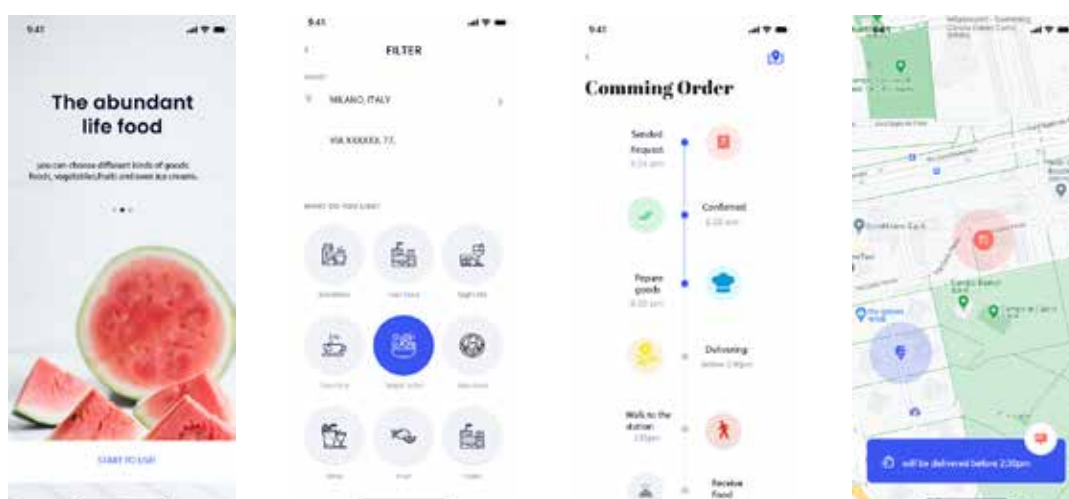


The types of cabinets will become more diverse to meet the needs of different users.

## 10.5 Interaction part

In addition to allowing other fresh produce e-commerce platforms to access the system for unified delivery and storage, FRESHGO also has its own system for placing and purchasing orders. (You can place orders for fresh produce and takeaway food on the system)

The main feature of this system is the ability to track where your order has gone and to see where your goods have been delivered to.



# CONCLUSION

Buying fresh food is an integral and important part of every household, and in order to make it easy and fast for everyone, fresh food e-commerce has come into being. After in-depth research, I found that the rapid development of fresh food e-commerce in recent years has indeed facilitated people's lives, but at the same time, there are many immature areas: the contact method that needs to be improved under the epidemic; the delivery method of fresh food products needs to be improved; the delivery time is not flexible enough and so on.

Therefore, the FRESHGO system is designed to solve the various problems in the whole fresh food buying scenario. The FRESHGO system is designed to increase the delivery efficiency of the takeaway riders, reduce the possibility of fresh produce spoilage, reduce the contact between consumers and takeaway riders, and reduce the time consumers spend on fresh produce purchases. At the same time, the FRESHGO system can help establish a 15-minute city in the post-epidemic era, assisting the people to buy fresh produce more conveniently.

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