

Study on the Optimization of Food Delivery System Based on Scenario Method

Yunxiao Zhang

Sichuan University, Chengdu, China.

Corresponding Author:18305187522@163.com.

Abstract

The takeout industry has become the focus of Internet enterprises in the past two years. The takeout and order mode of O2O mode is a mature application in O2O mode. Food and beverage enterprises have a high degree of acceptance of O2O model, and consumers have gradually developed the habit of ordering food and beverage. The capital market has conducted multiple rounds of financing for many third-party food and beverage enterprises. The O2O food and beverage industry in China develops rapidly and enjoys a broad market space. Logistics distribution is the key link of takeout, so it is of great significance to solve the problem of logistics distribution in the development of the selling industry. This paper USES scenario method to establish role model, explores the problems and pain points in the food delivery system, and puts forward improvement measures and Suggestions in order to improve the whole delivery system and improve service quality.

Keywords

Scenario method, Delivery, Food and beverage, Distribution.

1. Introduction

Catering is the most primitive demand of human beings. After the O2O e-commerce model contacts the catering industry, a hot industry -- takeout is derived. As the tertiary industry of the catering industry, coupled with the Internet, big data, software development, rapid integration, ushered in the spring. At the same time, it has attracted a large number of capital inflows, development opportunities unprecedented huge, the future prospects immeasurable; at the same time, under the appearance of rapid development, there are many industry problems that need to be solved urgently. If the industry pain points are not addressed, it will be difficult for the food delivery industry to make profits when subsidies are stopped in the future.

1.1 Background

1.1.1 Topic origin

In recent years, the pace of life continues to accelerate, dining out and selling point meal become more and more popular catering consumption habits in the society, and the transaction scale of catering takeaway market will also maintain a high growth rate.

There are two kinds of restaurants providing take-out service in China: one is brand chain restaurants, such as KFC, McDonald's and pizza hut; The other category is the small and medium-sized restaurants in densely populated areas.^[1] The first delivery service is special: it has a large number of chain stores and produces a centralized delivery service. Consumers need to call the unified telephone or log in the unified ordering website, after placing an order, the management center will find the nearest chain store for consumers to carry out the delivery. The second delivery service is similar to "Grub Hub" in the us, such as "Meituan takeout", "Eleme" and "Baidu takeout" in China. Catering enterprises cooperating with the website can publish menus on the website and receive orders.^[2] Nagurney(2001) proposed the idea of network equilibrium. For products that are often selected and purchased, a super-network structure model is built, and the nodes, paths and places of origin/destination selected by consumers are clearly identified, so as to model and analyze the motion path of consumers' TV purchase.^[3] Domestic enterprises entering the field of food and beverage

delivery should strengthen the information system construction in many order processing links such as "order receiving, food processing, delivery and pick-up, terminal delivery".^[4]At present, there have been relatively mature schemes and models for the two links of "order receiving" and "food processing", but the links of "delivery and delivery" and "terminal delivery" are still weak points and need to be improved.

1.1.2 purpose and significance of the study

The optimization of catering takeout distribution system can make logistics distribution enterprises firmly establish customer-centered, fully pay attention to the value and importance of scientific distribution, deal with the last kilometer well, and seek the third source of profit in distribution; On this basis, catering enterprises can expand new business, increase revenue, improve service quality, reduce operating costs, improve customer satisfaction, improve sales, expand business scope, establish a good corporate image, improve the level of information management, and promote enterprise operation to the next level.

1.2 Research contents

1.2.1 Research contents

The optimization of catering takeout distribution system can make logistics distribution enterprises firmly establish customer-centered, fully pay attention to the value and importance of scientific distribution, deal with the last kilometer well, and seek the third source of profit in distribution; On this basis, catering enterprises can expand new business, increase revenue, improve service quality, reduce operating costs, improve customer satisfaction, improve sales, expand business scope, establish a good corporate image, improve the level of information management, and promote enterprise operation to the next level.

1.2.2 Research methods

"Scenario" is a series of factual descriptions of future situations and developments. This paper will conduct a qualitative study on the status quo of food delivery at catering businesses around a shopping center, and use "observation", "interview" and "field investigation" to analyze and study the work of food delivery staff and business administrators. Then, two important personas in the system are created by the "role method", and the roles are put into the specific work situation by the "situation method".^[5]

2. Method

2.1 Basic concept of scenario method

2.1.1 Source, present situation and development of scenario method

Scene method is translated from "scenario", which itself means "scene" and "situation". Therefore, it is also translated as "situation method". A scene is a scene in a movie or play. Scene has two meanings, one is emotion and scenery; the second is the situation and the situation. So, the situation is the mental state of the character and the environment.

Scenario method, also known as scenario analysis, has been developed for decades abroad and was first used in military affairs. The use of scenario analysis began in the late 1940s, when technicians at the RAND Corporation in the United States described and predicted scenarios in which unfriendly countries could use nuclear weapons to pose a threat. As a result, many of the world's leading companies now use this approach in developing strategic plans. Some governments have also adopted such measures for change. For example, in the peaceful change of apartheid by the white government in South Africa, the government used scenario analysis to predict the possible outcomes of various choices and then made the choices.

There are some defects in the knowledge of the long-established application field in the take-out ordering system, and the use of scenario method can improve the problems caused by these defects. In addition, scenario method can also be used for analysis and design, to explain the environment in the positive use, and to prove the design Suggestions in the existing use. From the perspective of

dialectical comparison, we can get a comprehensive system of different perspectives, so as to provide an effective way to improve the usability of software by using the idea of scene design.^[6]

2.1.2 Significance of scenario method for optimization research

Scene establishment is the initial stage of the application of scene method. It is necessary to set various environments in the scene, including building environment, hardware environment, software environment and task environment. Scene description is a refinement of the scene based on the establishment of the scene. After the scenario is detailed, it can be fully applied to build the test environment and tasks for the established scenario, host the test or interview.

2.2 Application of scenario method in optimal design

2.2.1 Scenario establishment

The establishment of user-centered scenario is illustrated by the example of O2O online and offline platform used by businesses around colleges and universities to serve students. Imagine student A went out of the classroom after class at noon, went to the restaurant and found that there were A lot of people ordering the meal, and the rest of the meal was not to his taste, so he wanted to go back to the dormitory and order A take-out, after which he would have class in the afternoon. Zhang decided to use Meituan. When opening the food column, he needs to consider whether to order the food he wants most, which has a high starting price and a long delivery distance, or the fast food with a low starting price and delivery cost, which can be reached quickly. At this time, he found that the delivery service of a noodle restaurant with a higher score was Meituan, which could guarantee fast delivery, punctual arrival and high service quality, so he began to choose dishes and place orders. The merchant promised to arrive in half an hour, but arrived in forty minutes.

In this scenario, the character is classmate A, the building environment of the character is campus, the software environment is Meituan take-away APP, and the task environment is ordering delicious and convenient takeaway. Situations cannot exist independently of the characters. Generally speaking, the behaviors, experiences and emotions of the same characters vary greatly in different situations. The description and usage of the scenario are described in detail below.

2.2.2 Scenario description

Scene description can include text description, picture description, video description and so on. The situation description needs to consider some relevant influencing factors, which must be mastered before the situation description can begin. Taking the above scenario as an example, the text description can be shown as follows:

Student A had five classes in the morning, and the class was over at 12:15 a.m., so he was very hungry. However, at that time, the restaurant had the most students, and the delicious food was usually sold out.

When A classmate need to consider many problems: (1) choose A take-out software: when he want to consider using A take-out software is more convenient and affordable, given the last use hungry bad order experience, delivery time is too long lead to be late for class in the afternoon, and his own Meituan delivery voucher can be used, so the students chose to use A Meituan selling point meal outside.(2) which kind of food to choose: fast food, Japanese and Korean food, or specialty restaurants. Generally, fast food does not change the temperature and taste of food after a long time of delivery, making it fast so the waiting time is short, but the starting price is high, and it is not very healthy and delicious; After a long time of delivery, the temperature and taste of Japanese and Korean food become a little worse. The production speed is a little faster, but the distance is far, and the delivery cost is high. The temperature and taste of food in the specialty restaurants will decrease significantly after a long service. Besides, the cooking process is longer and the service time is longer, but the food is healthy and delicious. Taking into account A variety of factors, student A chose Korean cuisine, because he found that A business with A high score of Korean cuisine was offering Meituan special food and was offering A discount, so he gave up his concern about the slow delivery speed and high delivery cost, and then ordered the food.

Midway through A classmate by Meituan take-away software positioning system can see that the distribution of the red light, wait for long time may encounter on the way near the appointed time, got A call from the delivery staff showed his intercept encountered security guards at the gate of the school, A classmate to school take delivery back to the dormitory dining, failed to complete orders more than conventional time 10 minutes, the whole process than A classmate plan longer than 20 minutes, A for this order by the students for four stars, but said about food.

The description of this scenario contains the user's environment, tasks, and special requirements. Characters can complete tasks quickly and efficiently in the environment. The design of food and beverage delivery system needs to be more intelligent, concise, convenient and quick, and there should be a solution in advance to the occurrence of special events and the limitation of environmental conditions, within a controllable and predictable range, so as not to affect the user experience.

2.2.3 Situational use

After using the data and data obtained by various methods and establishing the situation for description, the situation should be effectively applied. Through the establishment of scenarios to determine the user's use process and operation process, so as to find out the problems that may occur in various scenarios, so as to improve the system. It can improve the delivery process, the APP interaction design, and the delivery staff's movements, so as to improve the user experience.

Through the description of the scene, the following information and information of the user can be obtained: the operation mode of the food and beverage delivery system desired by the user, and the reasons for which APP people want to use; Respect the user and his goals; Food delivery system features and use attributes to have a complete form, possible form in the future.

Through the role setting of scenario method, the target group can be basically determined. According to different combinations of scenarios, differentiated solutions will appear and it is difficult to choose. In this case, scenario method can select the most suitable solution that meets the requirements of people and is compatible with the environment. Scenario method can be used in APP product design, because people can adapt to the product through learning, but the environment will not actively adapt to the product. Therefore, the scenario method can be used to set the use scenario of the product to determine the product design. It can also be used to evaluate and test the feasibility of the APP through scenario analysis to see whether the events occurred during the test are consistent with the scenario, which can be used as an indicator of software usability.

The use of scenario method can only be more effective if it is combined with other methods. Methods such as questionnaire survey, test and interview can be used to refine the problem, so that the solution to the problem is more favorable and feasible for system optimization. Any detail of the scenario description may become a key issue for discussion and research. Through the analysis and discussion of the main points, the system is gradually improved to improve the most cost saving, the highest efficiency, the best user experience delivery system.

3. Case application of a shopping mall

3.1 Catering delivery service platform and delivery personnel

So far, the delivery O2O platforms Eleme, Baidu takeout and Meituan takeout are all gradually building their own logistics and distribution systems. Their logistics and distribution modes mainly include third-party logistics, self-supporting logistics, crowd sourcing logistics and self-distribution by other merchants.

(1) Eleme mainly adopts the mode of self-run + third-party wide distribution. Eleme started to set up its own delivery platform in August 2015. The delivery mode includes self-run delivery, hummingbird team and hummingbird crowd sourcing.

At present, Eleme can provide the delivery needs of breakfast, lunch, dinner and midnight snack in multiple time periods in the distribution scope. It is also the longest one in the takeout O2O, and it pursues the delivery mode of common categories and channels.

(2) Baidu takeout is characterized by its own city-wide delivery with accurate positioning. Different from Eleme, the slogan of Baidu takeout is: only do high-quality takeout. The distribution is positioned as a white-collar group between 22 and 40 years old.

(3) Meituan takeout is a self-supporting + agent + crowd sourcing distribution mode that wins in quantity.^[7] According to the official Meituan takeout model, it chooses a logistics model similar to Eleme, namely "self-run + agent + crowd sourcing". Crowd sourcing logistics is a distribution method that emerged in the second half of 2015, mainly using social logistics to solve the problem of insufficient delivery capacity such as takeout.

(4) Dada delivery: dada adopts an operation mode similar to Didi taxi, which builds a platform between part-time deliverers and merchants with delivery needs. Merchants can place orders through dada APP or API interface, while nearby part-time deliverers can snatch orders to complete delivery tasks.

3.2 Roles and scenarios

3.2.1 Establishment of personas of consumers, food deliverymen and merchants

To study the characters of involved in the food delivery system, and details about a shopping center and the surrounding catering businesses take-away meals, the authors use a week in each period of continuous repeat visited 20 restaurants, businesses cover a variety of formats, including inside the store in the upscale restaurants, shops along the street, alley small restaurants, etc.; Using the method of questionnaire, interview method and observation method, interview survey of 30 take-away meals, including Meituan delivery Courier, Baidu take-out delivery member, hungry? Delivery member, hummingbirds, dada distribution such as the third party logistics distribution member part-time marki, etc, they are cross services in various businesses, as well as the local representative of consumers, they include white-collar workers, students, community residents and so on. Obtained the simple information of the order of some merchants within a week, including the user name, delivery address, order content, delivery time, the evaluation, etc. The survey results were summarized and analyzed to obtain a series of elements needed to build the scenario.

First, the details of the three research objects -- merchants, food delivery staff and consumers -- are shown in the Table 1.

Table 1: Business information description table

Vendor name	Average daily order quantity	Delivery mode and docking platform	The comprehensive score	Merchants score	Distribution scores	Send the price	The shipping fee	Mean time of delivery(min)
Gold rice supply and demand room	35	Meituan Courier	4.7	4.7	4.8	20	4	43
Papa John's pizza	5	Papa John's Shanghai provides delivery and delivery services	4.7	4.4	4.8	0	8	57
Rong li records chengdu	68	Meituan Courier	4.6	4.5	4.6	20	5	42

's famous snacks								
Water vein hall	6	Meituan Courier	4.7	4.7	5.0	20	5	42
Burger king	27	Meituan Courier	4.5	4.5	4.4	20	5	43
King of the stars chicken head	8	Priority delivery of ele. me	4.3	4.4	4.2	20	2	29
Longmen 16	3	A hummingbird Courier	4.2	4.0	4.4	20	4	33
Three gu take food	3	A hummingbird Courier	3.9	4.0	3.8	20	4	29
Bird uncle Fried chicken	3	Proprietary distribution	4.1	3.9	4.3	25	2	41
Chen huayong malatang	22	A hummingbird Courier	4.4	4.6	4.3	20	4	40
First best chicken steak	2	Baidu Courier	4.0	3.8	4.5	0	5	53
Wei wan braised chicken rice	2	Baidu Courier	4.7	4.9	4.7	20	5	45
Big face chicken	15	Self - distribution gadada distribution	4.6	4.7	4.6	15	3	30
Cheng's home cooking	9	Self - distribution gadada distribution	4.6	4.7	4.5	25	3	50
Chen huayong malatang	5	Baidu Courier	4.6	4.8	4.5	20	5	49

Table 2: Information description table of food delivery operators

The name	age	At the	Work experience	Average daily order volume	Whether the part-time	The original work
Teacher	43	Eleme	More than a	40 single	full-time	A mechanic

zhang			year			
Yang	35	Eleme	A year	50 single	full-time	Taxi driver
Guangxi teacher	31	Meituan take-away	Half a year	35 single	full-time	Security, water electrician, mechanical and electrical maintenance
Master hu	27	Dada distribution	Half a year	45 single	full-time	Mall security
The chef,	39	Dada distribution	Three months	36 single	full-time	An office worker
Gregory teacher	46	Dada distribution	Two months	28 single	part-time	A retired worker
Master liu	30	Dada distribution	Three months	48 single	part-time	Home appliance store distribution
Zheng master	37	Meituan take-away	A year	50 single	full-time	I used to deliver takeout
Xing teacher	41	Meituan take-away	Nine months	48 single	full-time	A small supermarket
Master li	35	Private restaurant and dada distribution	Two years	40 single	part-time	Has been delivering food to private restaurants
Mr. Wang	32	Chicken chop shop partner and delivery staff	A year	15 single	full-time	Proprietary stores
Sue the teacher	40	Baidu take-away	Two months	28 single	full-time	Taxi driver
Master Chen	34	Baidu take-away	Four months	32 single	full-time	Driving school coach

Table 3: Consumer information description table

The name	age	Call meal time	professional	Using the software
Ms wu,	25	11 at noon	White collar workers	Eleme
Mr. Zhang,	20	13:00 at noon	students	Eleme
Mr. Wang,	32	4 PM	Building materials dealer	Meituan take-away
Ms. Zhu	28	17:00 p.m.	tenants	Baidu glutinous rice
Ms. Wang	36	At noon	Building material shop owner	Meituan take-away

We created three personas based on the different working modes and needs of each user in the delivery system. The first two types of personas are mainly analyzed in detail. For the requirements

of these three types of personas, auxiliary requirements are realized, and the role relationship created is shown in Figure 1. .

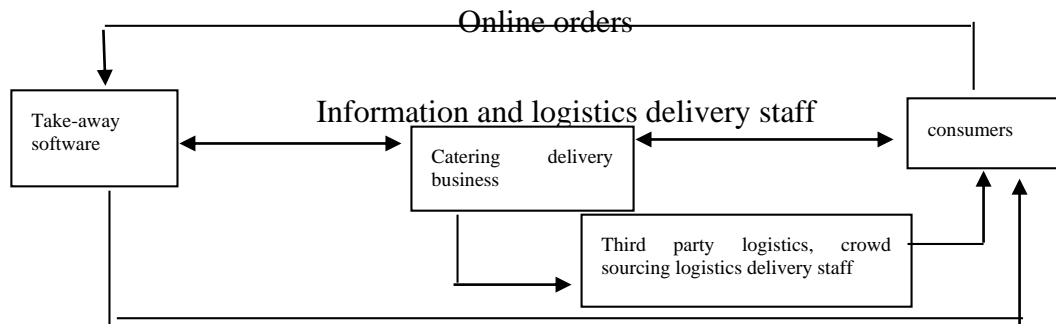


Figure 1: Role relationships

Next room part model is set up, according to the survey found that with the development of food industry, take-away meals member is an emerging industry, the pay is high but relatively hard, so the room clerk age between 25 to 35 years old, some have been married, most of the cultural level is not high, more motivated and hard-working spirit, all hope that through their own hard work to earn a reward. Now there is a third party outsourcing delivery platform, which makes the demand for food delivery workers become more and more large, the entry threshold is low, there are more part-time staff, there are also a lot of deliverymen because of the salary objective give up the original work full-time as delivery workers. Now create the typical role information based on the survey information.

Table 4: Part one:

The name	Teacher zhang
age	43
character	Honest and honest, practical and willing to work
Level of education	Junior high school
Motivation purpose	Came from shandong, rented a house in nanjing for many years, had a wife and children, auto mechanic changed industries, old rider, more efficient to complete the work, get more wages, save more money
The physical environment	The company is equipped with clothing, battery car
The social environment	Qiaobei business district, pukou district, nanjing
Science and technology environment	Eleme software, android smartphone, xiaomi mobile power

Table 5: Part two:

The name	Master hu
age	27
character	Young aspirant, strive to seek with more development opportunities
Level of education	Junior high school
Motivation purpose	He used to be a security guard in a shopping mall with a low salary. Later, he found that a food delivery clerk could earn a good salary as long as he worked hard. He quit his job in the hope of getting a high salary through his own efforts
The physical environment	Uniform service, own battery car
The social environment	Qiaobei business district, pukou district, nanjing
Science and technology environment	Dada distribution, two android smartphones, a mobile power supply

Table 6: Part three:

The name	Guangxi teacher
age	31
character	Have the courage to try new things, have the sense of responsibility
Level of education	Junior high school
Motivation purpose	I have changed many jobs. I think the food delivery workers are very smart. I have flexible working hours and good salary
The physical environment	The company with the work clothes, battery car
The social environment	Qiaobei business district, pukou district, nanjing
Science and technology environment	Meituan takeout, android smartphone, mobile power

Table 7: Part four

The name	Master liu
age	30
character	Dare to challenge, bear hardships and stand hard work
Level of education	High school
Motivation purpose	Live in the neighborhood, in the distribution range of many catering businesses, know that dada can part-time caterer and high delivery costs, decided to earn some extra money part-time
The physical environment	The company unifies the work clothing, own electric car
The social environment	Qiaobei business district, pukou district, nanjing
Science and technology environment	Dada distribution, apple smartphones, mobile power

Create the take-away business role model, the current catering businesses in order to expand sales channels, joined the Eleme. Mostly, Meituan take-away, Baidu take-away, dada distribution room platform, such as Internet platform to provide subsidies and room service, due to the take-away O2O competition, each platform outside circle of users through "burn money", crazy subsidies. At the beginning, merchants benefited a lot. Customers were sensitive to price, and the order volume kept increasing. However, if we want to retain real customers, we cannot only burn money through high financing.

Table 8: Part one:

The name	Mr. Wang,
age	42
character	Dare to fight and take risks, be enthusiastic and patient, Manager of a famous fast food chain
Level of education	High school
Motivation purpose	Through efficient management of restaurant takeout delivery process, motivate employees, improve turnover, balance the gap between peak and peak seasons, improve business conditions.
The physical environment	The restaurant has a certain scale and capital, has its own delivery team, and is connected to several delivery platforms at the same time
The social environment	Qiaobei business district, pukou district, nanjing
Science and technology environment	Computers, phones, smart phones, walkie-talkies

3.2.2 Establishment of food delivery situation

First, set the work scene of the food delivery staff: the work scene of the food delivery staff includes both inside and outside the store. The work in the store includes waiting for the food, checking the order and checking the route. Work outside the store includes picking up orders on mobile phones, finding destinations and contacting customers. General work situation is: the traditional take-away meals member of the mobile phone received orders hint, he chose to accept order, back to the store waiting to take food, check the order, take food after placed on heat preservation box, fixed phone, according to the experience of lock is roughly delivery range, at the same time checking my software provides map and the best route, confirmed departure;^[9]In the delivery process, in case of emergency, timely feedback to the store, inform the customer of the order details, contact the customer to pick up the meal upon delivery, and complete the order to return.

Due to the variety, food form, delivery location, date, delivery location, weather conditions, delivery time, order completed and customer evaluation are different, so the scene setting of the delivery staff needs to be more detailed and complex.

Situation 1: on a working day at noon, when the temperature is high, master Zhang receives a mobile phone prompt on the way to finish dispatching a single order. There are several new orders. This is the task assigned by the background system. Master Zhang arrives at the shop, compares the dishes on the order shown on the software, picks up the meal at the kitchen packing place, checks it and gets ready. Click start, Eleme shows the best map route immediately, and reminds the food delivery staff with the prompt tone. Master Zhang's location is displayed on the Eleme software in real time, so that customers and businesses can observe the specific location of the deliveryman and timely urge or dispatch the deliveryman. The software displays the information of the first order, arrives at the address of the first customer, clicks the dial number, the phone is connected, the other party picks up the meal smoothly. Then set out to the second, click dial phone, but the other did not put through the phone, master Zhang decided to delay delivery, first go to the third, the information feedback to the merchants, merchants continue to contact consumers. The third one finished the delivery smoothly, and the second one contacted master Zhang, who returned to the address of the second one according to the map and completed the delivery. At this time, the fourth customer is asking for the order, the phone prompt stereo, master Zhang immediately went to the fourth, to prevent the customer evaluation is too low. After completing the delivery of this meal, the software showed his current delivery quantity and three orders, and the commission would be 200 yuan, so he hurried back to the store to accept the next delivery task.

Scene two: a weekend day, the weather is cloudy, small master use of part-time room for vacation, he opened the dada software and received an order, to after, he quickly identify business location, merchants to take food, ready to go to find another shipping address on the order, small master immediately grab single, merchants to take food, after waiting for apply to the meal, began to delivery. First client on the way of undelivered twice, please understanding, master Hu called explain because the traffic after the first single well distribution, small master found the storage battery is broken, can't continue to send, then delay orders, contact merchants consultation sent another room member support, at the same time make a phone call to contact customers, explain why delay, hope to understand. After that, the merchant sent a battery car to support Xiao Hu, who completed the order, but the evaluation was three stars, so he could not get the commission he deserved.

Secondly, the business manager's working situation is set. The business manager's working environment is indoor, and the work content is to constantly confirm orders and print out orders from the kitchen. In case of a reminder, the manager shall first check the kitchen catering status. If the production is not completed, the acceptance of other orders shall be delayed. If it has been delivered, the seller shall contact the delivery staff to learn about the delivery situation and give feedback to the customer.

3.2.3 Method and process of food delivery scenario study

This study used interview and observation methods to investigate the status quo of restaurant delivery, and found problems and pain points to be solved in the process. Here, the table is used to summarize the problems encountered by the delivery staff in the process of work:

Table 9: Problems encountered in the scene of takeaway delivery personnel

Specific problems	Scenario reduction
The order was damaged and soiled	When the deliveryman took the food, he found that the order was covered with oil
The delivery places are scattered and the routes are complicated. The distance between the two orders is far	The deliveryman got two single addresses respectively in the north and south, the order distribution is not reasonable, the delivery time is long
The customer is out of touch	The deliveryman needs to wait and hesitate whether to leave, which leads to the delay of the next order. If the order is delayed, the order will be evaluated badly and the commission will be reduced
It is not convenient to check the list in bad weather	When the weather is windy, rainy, snowy, cold and hot, it is exactly the time when food delivery is hot. At this time, it is difficult for electric truck to deliver food, and it is not convenient to check the order, which often leads to low evaluation of delivery
Traffic conditions are unpredictable and support is difficult to obtain in case of accident	The electric car broke down during the delivery, so it is a problem whether to repair the car or continue to send the food for support. Often, traffic jam accidents will also affect the delivery
Meal packet loss	In a busy shopping mall, the food delivery man has to send many orders at a time, park the electric car and leave it upstairs to deliver the food. When he comes back to find that the other order items in the bag have disappeared, he needs to re-order the food out of his own pocket for the delivery of customers, and the time is extended
Too many orders without order, the route is not easy to find	The delivery staff received too many orders at one time during the peak period, which led to poor route planning. Although there were a lot of orders delivered, the later orders were delivered later, which affected the quality of the food and the evaluation of the delivery

Table 10: Problems encountered in the business manager scenario

Specific problems	Scenario reduction
Takeaway order confirmation conflicts easily with physical in-store customers	During the peak period, the client of the ordering system needs to confirm the order manually. At this time, the customer who comes to the store is waiting for the order, so the client cannot order immediately
Customers call reminders, not satisfied with software reminders	Managers need to find and confirm orders in the system, and contact the deliveryman to speed up the delivery, resulting in delay and chaos
The phone and system are receiving orders at the same time, resulting in chaos	Do some businesses have both telephone ordering and delivery software ordering channels? It is easy to be busy during the peak period
Too many orders, missing orders	When the customer asks for the order, it is found that the order has been missed, the kitchen has not been done, or has not been sent out
The delivery man had an accident	Such as battery car failure, no power, collision pedestrian friction delay delivery, meal bag loss, etc
The delivery man slacked off	After the afternoon delivery peak, the food delivery staff are very tired, some have reached the commission target, for the need to deliver the order, not willing to accept, or the enthusiasm is not high

4. Optimization methods and Suggestions for delivery system

4.1 Propose optimization methods from different aspects

In order to thrive after the O2O bubble, the takeout market must solve the existing problems of the industry, explore the pain points of distribution, return to the essence of business, dig deeper into the market demand and improve the service level.

4.1.1 Business management

(1) Choose a reasonable distribution method

Each business should choose different comprehensive distribution methods according to the size of the store, the number of orders, whether it is the peak, the peak season.

(2) Improve the speed of meal delivery

Many times because of a backlog of orders, when the room clerk after receiving order to merchants take food still need to wait for a period of time, this time cause waste of time is behind the rapid delivery of man to remedy, very affect consumers' dining experience at the same time, so be reasonable equipment eat and ahead of time does not affect the products quality, make the room clerk after the same single room.

(3) Improve hygiene quality and standardize packaging

4.1.2 Logistics and distribution provider

Logistics distribution is the key to O2O platform. How to effectively solve the distribution problem is of great significance to the development of O2O platform. In order to make the customers of the city distribution experience convenience, efficiency and low price, it is necessary to require the distributor to have a lower distribution cost, higher distribution efficiency.

(1) Focus on user experience and establish user reputation and business brand

Pay attention to the construction of human service platform. When the food delivery staff has problems, the communication between consumers and merchants is relatively tense and disordered. At this point, the logistics delivery party's human service platform is required to solve the problem in time.

(2) Ensure quality, convenience, efficiency and low price

Improving the delivery speed and ensuring the delivery quality have always been the focus and difficulty of the take-out delivery system, such as designing the incubator according to the seasonal changes, keeping temperature records, and using various professional food storage technologies to prevent food from cooling too fast or mildew affecting the taste.

(3) Optimize distribution network layout

According to the previous distribution experience, the provider of logistics distribution should arrange distribution outlets rationally according to the historical data, so as to minimize the distance, fastest speed and wider radiation range of delivery service.

(4) Increase the construction of crowd sourcing logistics distribution mode

Now the concept of sharing economy has been widely known, car sharing, sharing orders, etc. have been widely used, can establish a long-term sharing mechanism, so that the reasonable distribution of resources evenly distributed.^[10]Make full use of social idle vehicles, mobile empty vehicles, so that every single sent, every idle resources are fully utilized. For example, taxi or express drivers are also connected to the delivery platform, so they can take delivery orders along the way without delaying the delivery of customers. Especially the bad weather, taxi driver's transportation is more suitable for delivery.

(5) The entry threshold and training of food delivery staff should be adjusted appropriately to stabilize the service level

Due to the large demand for food delivery staff, the entry threshold is low and the comprehensive quality is not high, which will have a certain impact on the service quality. It is necessary to carry out

induction training and on-the-job training for distribution personnel, ensure standardized service, and promote them in different levels, so as to increase their seriousness and love for work. At the same time, the food delivery industry should formulate new industry standards to ensure the stable quality of employees, as well as social respect and recognition.

(6) Optimize distribution tools and other physical factors

(7) Improving the subsidy and incentive system

(8) For the peak and off-peak, off-peak and off-peak season of food delivery efficient scheduling, service continuity

In the before and after the Spring Festival or holidays, often can appear shortage problem of choose and employ persons, and this is the hot period of you order takeout, do not have enough take-away meals, leading to poor continuity of service, the service level is not high, consumer experience, near as responsible for the distribution, distribution of flexibility, winter and summer vacation in summer and winter vacations to dispatch it to store the attachment room is more reasonable.

4.1.3 Interactive design of mobile client, namely takeout APP[11]

In the context of comprehensive application of smart phones, people are more in pursuit of convenient and fast life. It is not of great practical significance for O2O industry to only focus on PC terminal reform, and mobile terminal is the final holy land. Therefore, the joint development of PC terminal and APP can only adapt to the development trend of O2O industry by focusing on mobile terminal.^[11]

(1) Focus on differentiated and personalized services

Breakfast delivery, afternoon tea delivery, flower delivery, medicine door-to-door delivery and other services have been provided in various takeout delivery apps.

(2) Optimize the scheduling system

In the era of Internet +, the Internet platform with big data and LBS positioning technology can make full use of the real-time information of merchants, deliverymen, consumers and orders to achieve effective scheduling, so that they can share data with each other, master their status and busy degree in real time, make reasonable arrangements and improve delivery efficiency.

(3) Consumer classification and business classification, differentiated distribution

Through the historical orders and shipping information, data mining, according to user's habits classified with the customers, and orders to the businessman, peak, radiation scope of data mining, and also for sizing, forming elastic smaller distribution pattern, forming the difference of the single point to multipoint, multipoint to multipoint distribution capabilities.

(4) Develop consumers' habit of ordering food in advance

According to the real-time order quantity, the APP should send reminders to customers to avoid the current delivery peak of orders, or send messages or articles one hour before the meal to advise customers what to eat today, so as to give customers the time to think about ordering food in advance, and at the same time, it is more humanized and conducive to improving customer satisfaction.^[12]

4.2 In the new city shopping center case implementation

In the following week, based on the feedback from the merchants and deliverymen, the investigators learned that some problems could be improved, and some problems needed time to develop habits and see the long-term impact. By the method while is good to forecast the future situation, can be important factors of product together, will be treated as they coordinate analysis and logic is very strong, but the method of the process is complex, the recent effect is not significant, receive the restriction of traditional mode of food and beverage enterprise, to improve the long-term follow-up observations. Situational approach pays more attention to the construction of the framework, and the establishment of the scene is to analyze and evaluate whether the service effect of the food delivery system can satisfy consumers.

5. Summary and discussion of the whole paper

5.1 Summarize

Based on the method to set up different scenarios in order to find all sorts of problems arising from the food delivery system and industry pain points, combined with knowledge in the optimization advice, take-away O2O platform development has entered the mature period, fast, many industry problems with the passage of time will be readily solved, college students as the main audience of take-away food industry development, provide improvement Suggestions should consider the advantages and disadvantages of the system, and promote its continuous improvement and optimization of a new inspiration. Along with the development of mobile Internet, the use of big data, Internet + plan of propulsion, software and hardware development, rapid delivery system will integrate various resources, opening new doors, the age of the Internet service platform for software developers, restaurant, take-away distribution, customers create multiple interests, promote the further development of the O2O commerce platform.

5.2 deficiencies of this study

In this paper, the object of study for the whole meal delivery system, due to unpredictable O2O take-away market, the massive influx of money, risk and opportunity caused a boom, the pattern is still under improvement and exploration, development speed quickly, the development trend of the future unpredictable, in this paper is completed, the industry direction and there will be new changes, through compared with many of the new literature, including O2O mode, delivery and distribution, distribution system, etc., found that many incomplete and shortcomings.

First of all, the author pretty, research field is relatively limited, and the food delivery system research needs to sociology, economics, management, logistics distribution, product interaction design, marketing, human resources, the knowledge of many sided, therefore, need to be further studied based on the method of optimization, the specific implementation measures to carry out the above is not difficult to implement. Secondly, there is a lack of relevant literature on the application of scenario method. The author has integrated a large number of network resources and journal articles, but there are still some deficiencies, resulting in a lack of cases and a slightly empty analysis.

5.3 Problems to be solved in depth

In this paper, how to use scenario method in the optimization process is discussed clearly, and the information of role setting is fully prepared. This is also an attempt by the author to comprehensively apply the knowledge learned and knowledge of other disciplines. The new ideas proposed in this paper have not been verified by a large number of practices. I hope that I can have more opportunities to participate in practical activities in the future and constantly improve them.

References

- [1] Yan xianbin. On the status quo and development of O2O catering delivery model in China [J]. Market modernization,2015,22:45-46.
- [2] Pan Guangjie, Yang Weihua, Song Zhenyu. Discussion on improving customer satisfaction in catering industry [J]. Market modernization,2007,19:208-209.
- [3] Nagurney A, Dong J, Mokhtarian P I. Teleshopping Versus Shopping: A Multicriteria Network Equilibrium Framework[J]. Mathematical and Computer modeling, 2001, 34(7): 783-798.
- [4] Wang Yanzeng. Research on analytical CRM under O2O model [D]. Zhejiang university of science and technology,2013.
- [5] Yang Lingyun. Design and research of food delivery application system based on situational method [D]. Shanghai jiao tong university,2013.
- [6] Yu Xiao. Application of role method and situation method in user research [D]. Wuhan university of technology,2009.

-
- [7] Wu Jiarui. Research on the status and development of group-buying apps -- a case study of Meituan network [J]. News communication,2016,No.27603:63-64.
- [8] Xiao-wei xu, emilio abalos ong. Delivery of "taobao" - introduction to the management solution of "hungry?" [J]. China business theory, 2016, 10:3-5.
- [9] Luo Songbo. Research on the optimization of urban logistics distribution routes based on GIS system [D]. North China electric power university,2015.
- [10]research group of sharing economy development report, zhang xinhong, gao taishan, yu fengxia, li hongsheng, hu yongjun, hao kai, xu qingyuan, CAI dandan. China's sharing economy development report: status quo, problems and challenges, development trend [J]. E-government,2016,No.16004:11-27.
- [11]Duan Weihua. Design and implementation of takeaway delivery system for catering enterprises [D]. University of electronic science and technology of China,2010.
- [12]Xu Miaoyu. Research on communication and marketing of takeout mobile client [D]. Northwestern university,2015.