

# ***Analysis of Factors Influencing Customers' Consumption on O2O Takeaway Food During Post-pandemic Times***

## ***- Taking Meituan Takeout as an Example***

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**Abstract:** Many people are still craving take-out food in the aftermath of the pandemic. They provide companies with good profits while also posing the challenge of identifying factors that influence customers' decision to place orders. In this paper, we will use Python to collect data and ROST to analyze the factors influencing customer's consumption on Meituan Takeout platform during post-pandemic times, in order to investigate these critical factors. Finally, statistics show that taste comes first, followed by package, delivery (if failed)>cost performance>hygiene>others. It hopes to further improve the models for O2O takeaway business.

**Keywords:** post pandemic, takeout, factor analysis, text analysis

## **1. Introduction**

As an increasing number of COVID-19 vaccines have been distributed globally and as a bunch of countries have loosened restrictions on their epidemic prevention policies, we are now transitioning into the post-pandemic era. Simultaneously, due to the rapid development of the O2O business model and people's urgent needs for takeaway food during pandemics, the takeaway food industry has experienced tremendous growth. According to "the development of the takeaway industry during pandemic times", the industry's total revenue is 603.5 billion CNY, accounting for 15% of the catering industry's revenue, which is expected to increase to more than 20% by 2020 [1]. The large number of new customers and unique circumstances contribute to the generation of substantial profits, but it also necessitates that the industry comprehend and meet the expanding needs of a variety of customers. In the post-pandemic era, the purpose of this paper is to investigate the factors that customers care about and their motivations.

Previously, Luo Yifan proposed the influencing factors from three perspectives: platform, delivery, and producer, and further calculated the weight of importance, which provides a comprehensive overview despite ignoring the pandemic situation [2]. Liu Diancai and Zhang Xin investigated the influence and requirements of delivery [3] and packaging [4]. Zhou Chao investigated the factors that influenced Hai Dilao after the pandemic [5]. However, the majority of research is conducted through questionnaires rather than direct customer comments, so in this paper, the data source would be comments from customers, and the author would select a more general

aspect or food type as opposed to a specific one. In order to investigate these crucial factors, both statistical analysis and literature analysis methods will be used in this study, such as Python for data collection and ROST for analyzing the factors influencing customer consumption on the Meituan Takeout platform during post-pandemic times.

In the short run, the author hopes to offer useful advice on food delivery platforms in post-pandemic times. Furthermore, these factors and the combination of literature review and statistical analysis methods are applicable to the O2O takeaway business model. On a long-term basis, additional validation tests and quantitative analyses could be conducted based on the factors proposed in this paper to enhance the models for the O2O takeaway business. Lastly, the takeaway business may indicate that the impact of COVID-19 extends beyond the realm of life and health to a broader range of human activities.

## 2. Literature Review

In Luo Yifan's paper, he analyzes the factors that influence customer satisfaction by firstly comparing the O2O takeout process to an analogous value chain and then analyzing the customer satisfaction-related procedures [2]. Then, a system of evaluation is developed using formal procedures as factors. He used a total of 17 factors, including 5 for the producer, 3 for the delivery, and 9 for the platform. Ultimately, he concluded that customers are pleased with delivery and producers, but dislike the platform's service [2]. This conclusion may not be reasonable because the platform must meet more criteria than the other two components of the evaluation system. In post-pandemic times, function, safety, human-centered design, and intellectual design are required to meet the needs of customers according to Zhang Xin's paper [3]. In Liu Diancai's paper [4], he explains that the delivery process we use has 21 customer focus points and 13 technical designs to meet their needs following the pandemic. Ultimately, in Zhou Chao's paper, he used 7 first-level indicators and 24 second-level indicators to formulate the evaluation system and reached the conclusion that customer satisfaction is positively correlated with 6 factors for Haidilao [5].

## 3. Methodology

**Platform selection:** In this paper we choose “Meituan Takeout” (<https://waimai.meituan.com/>) as an example because it is now the largest takeout platform in China, whose market share is over 60% of the whole.

**Data selection:** we choose five categories: hamburger & fries, Chinese fast food & bento, lobster & barbecue, Japanese sushi, and special snacks.

Among each category, four or five of the most favorite stores are selected to receive a total of 1000 comments (all of these stores are located in Shanghai).

**Data crawling:** python is used to extract the comments from the “Meituan Takeout App”. The attributes of the comments we grab are: comment time, comment score, and comment text.

**Data analyzing:** Rost text analyzing.

## 4. Results and Analysis

### 4.1. Hamburger & Fries

Through word frequency analysis, we can classify comments into 5 levels according to the emerging times in the comments.

#### 4.1.1. Statistics

Table 1: Hamburger & Fries theme level.

level	theme
1	taste
2	Package, service, delivery, cost performance
3	Weight, freshness, hygiene
4	Environmental protection, authentic

The theme of the first level is "taste", which has 637 direct descriptions, with "delicious" appearing 317 times out of 1000 comments. The themes of the second level are "package", "service", "delivery", and "cost performance", which appear 102, 107, and 131 times, respectively. The themes of the third level are "weight", "freshness" and "hygiene", which are mentioned 58, 50, and 32 times, respectively. The themes of the fourth level include "environmental protection", "authenticity", etc., with a score of 30 or less.

In addition, a co-occurrence analysis of ROST reveals that the words "taste", "hamburger" and "beef" co-occur approximately 50 times the most. For the second level's theme, "cost performance" and "combo" appear together only 17 times.

#### 4.1.2. Analysis

In the food industry, it is reasonable for customers to prioritize "taste", so "taste" would appear in the majority of comments. In addition, as a result of the O2O business model, service and delivery are the secondary products that customers can evaluate. Therefore, they are advancing to the next level. As for "cost performance", the most important factor is that from 2020, many industries have experienced a severe economic downturn [6] and would reduce staff's salaries in order to maintain their business. With a lower or nonexistent income, consumers have to place a greater emphasis on the evaluation of the product to make the most of their expenditure, resulting in the "cost performance" level accounting for the second level. Regarding the third level's "hygiene", fried food and hamburgers are easier to store than other takeaway foods, so hygiene concerns are uncommon. As for "authentic", this industry has high homogeneity and standardization [7], and other alternative commodities may be cheaper under COVID-19, so customers would not focus on whether a product is authentic or not, but rather on their preference. Furthermore, by analyzing the co-occurrence rate, it is evident that beef hamburgers are more highly regarded than chicken ones in this industry, as beef hamburgers have the highest co-occurrence rate. Moreover, the combo is not affordable enough, which may be caused by people's anticipation of the lower price and the fixed choice of the combo.

### 4.2. Chinese Fast Food & Bento

#### 4.2.1. Statistics

Table 2: Chinese fast food & Bento theme level.

level	theme
1	taste
2	Weight, cost performance, package
3	Delivery, hygiene, service

The word "taste" appears 1,198 times on the first level, with over 700 positive comments. The second level contains 181, 135, 114 words about "weight", "cost performance", and "packaging", while the third level contains 56, 73, 46 words about "delivery", "hygiene", and "service".

The co-occurrence analysis reveals that "next time" and "taste good" have a co-occurrence rate of 20%, which is higher than the rate in other categories, and that rice has the highest co-occurrence rate with "taste good" among all types of foods.

#### 4.2.2. Analysis

Chinese fast food and Bento are typically ordered by employees who do not wish to leave the office for lunch and have limited budgets and consumption desires due to COVID-19 [8]. Due to the proximity of these restaurants to their working offices and the fact that workers must continue working after eating, one of the most important requirements of the meal is to eat until full, so weight would be the second-level factor in this area. Nonetheless, delivery appears to be neglected. Due to the proximity of these restaurants to their primary clientele and the speed with which meals are prepared, there are few comments on the delivery, but it is certainly more important than the other two level 3 factors. Moreover, by comparing the co-occurrence rates of this area with those of other areas, we find that taste is a key reason why consumers return to this area. One reason is that these customers have more stringent taste requirements, but another possible reason is that unlike customers in other areas, taking orders for takeaway food is a routine for them in this area, so they will think more carefully about what to order next time on the app. Thus, the increase in co-occurrence times is not owing to "taste," but rather to the increase in "next ordering time." We can conclude that the majority of the people in this region enjoys the rice.

### 4.3. Lobster & Barbeque

#### 4.3.1. Statistics

Table 3: Lobster & Barbeque theme level.

level	theme
1	taste
2	Cost performance
3	Hygiene, delivery, package
4	Service, weight

1245 words are devoted to "taste", 217 to "cost performance", 132, 101, and 151 to "hygiene", "delivery", and "packaging", and 53 and 62 to "service" and "weight", respectively.

According to co-occurrence analysis, the co-occurrence rate between taste and package is the highest of all.

#### 4.3.2. Analysis

First, among all categories, lobster and barbecue receive the most taste comments. It indicates that people who order lobster and barbecue are more concerned with the flavor, which makes sense given that these dishes are intended to have a robust flavor. Second, the co-occurrence analysis suggests that customers who place a high value on taste are also likely to place a high value on the packaging, but it is possible that taste is actually related to package quality. When hot, lobster and barbecue are delicious, but when cold, they are not. Additionally, a complete and clean package is a symbol of hygiene, which is particularly important in the aftermath of a pandemic.

A good package can ensure that the meal is still hot upon delivery, so the heat preservation quality of the package is equivalent to keeping the meal tasty in this situation. Consequently, this pair of words has the highest co-occurrence rate.

#### 4.4. Japanese Meal

##### 4.4.1. Statistics

Table 4: Japanese meal theme level.

Level	theme
1	taste
2	Cost performance, freshness
3	Package, hygiene, service, delivery
4	Authentic, weight

There are 917 words about "taste", 205 words about "cost performance", 300 words about "freshness", 144, 123, 91, and 111 words about the themes of the third level, and less than 50 words about the themes of the fourth level.

Based on co-occurrence analysis, we know that "fresh" and "taste good" co-occur frequently in the comments, and that sushi is the product most frequently mentioned alongside "fresh."

##### 4.4.2. Analysis

Based on the results of word frequency statistics, we can conclude that in the Japanese dining area, freshness is of great importance to customers. The majority of ingredients in Japanese cuisine, such as salmon (mentioned 164 times) and eel (mentioned 129 times), require freshness to be authentic and safe, which plays a significant role in Japanese food culture [9]. However, few customers believe weight to be important. It is possible that customers' expectations for the weight of Japanese meals are low due to media influence, as the number of comments is small.

#### 4.5. Special Snacks

##### 4.5.1. Statistics

Table 5: Special snacks theme level.

level	theme
1	Taste
2	delivery
3	Hygiene, cost performance, package

There are 764 words about "taste", 103 about "delivery", 59 about "hygiene", and 47 about "cost performance".

##### 4.5.2. Analysis

According to the statistics derived from the collected comments, the most popular products in this region consist primarily of wheat-based foods such as post stickers and cold noodles, which are inexpensive due to their reasonably priced ingredients. Therefore, customers would not place much emphasis on cost performance on this occasion. However, delivery is relatively important due to the

fact that a long delivery time would be responsible for the poor flavor of wheaten food, and careless delivery would be responsible for the broken package, especially for the beverages. Therefore, delivery is the second most important factor.

## 5. Discussion

After analyzing these five areas, we have determined that in the post-pandemic era, taste is still the most important factor for customers to consider when ordering food online, while cost performance is the second most important factor due to low income levels. When you fail to meet the fundamental requirements, delivery and packaging will be decisive. As a result of the public's serious reaction to COVID-19, hygiene is now always considered [10], and other factors are then taken into account according to the partition of the food ordered: freshness for Japanese meals, weight for Chinese fast food and bento, and packaging for lobster and barbecue. However, this paper has room for improvement. For instance, the number of sample comments can be significantly greater than 5,000 in order to eliminate data uncertainty and increase sample factors. Methods of research can extend beyond word frequency analysis and co-occurrence analysis to examine the factors quantitatively.

To improve the customer experience, the following recommendations are offered: Self-selecting combos can make the set combos for hamburgers and fries more flexible, allowing customers to feel more in control and increasing their willingness to pay for the combos, despite their increased cost. For the lobster and barbecue areas, they can concentrate more on package design, as preparing a dish is nearly as important as preserving it.

## 6. Conclusion

The paper concludes, based on an analysis of online customer comments, that the order of customer concerns regarding O2O takeaway food is: taste>packaging, delivery (if failed)>cost performance>hygiene>other. In post-pandemic times, people place a premium on two factors when placing takeout orders: cost performance and hygiene, with varying priorities for different food partitions. In the future, correlation analysis and regression calculations can be used to analyze these factors further, and questionnaires can be designed to arrive at a more precise and accurate conclusion.

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