

# The Research of Online Shopping During the Pandemic

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## ABSTRACT

By the end of 2019, the outbreak of COVID-19 had brought many challenges and impacts to the global economy and people's lives. In order to effectively prevent and control the epidemic, some traditional entity supermarkets were severely restricted, online shopping became much more popular for consumption during the epidemic. Based on the changes of people's consumption patterns and consumption demand under the epidemic, this paper compares and analyzes the consumption patterns of consumers at different stages of the development of the epidemic. Meanwhile, combined with the actual market data, this paper obtains both characteristics and the development trend of people's online shopping consumption patterns during the epidemic, even in the post epidemic era. According to this analysis, the paper will give some relevant suggestions.

**Keywords:** Online Shopping; Fresh Food Market; COVID-19

## 1. INTRODUCTION

### 1.1. Research Background and Motivation

At the end of 2019, an unprecedented human disaster broke out and then it spread quickly at an unimaginable speed all over the world, which is called COVID-19 Pandemic. This frightening pandemic was not only a huge challenge related to human's lives, but also brought countless and heavy financial losses to the whole world economy. With the constant diffusion of this infectious disease, a great amount of economic activities and social acts were compelled to suspend both in China and foreign countries. Plenty of small and micro enterprises in China could not afford the negative growth of operating revenue and as a result, these enterprises had no choice but to close down. What made the situation standstill for China's economic development. According to statistical data from the International Monetary Fund, there existed a serious decline in world-wide economic growth. China was the biggest developing country in the whole world, which occupied important world status. Meanwhile, China was also negatively affected by COVID-19 in many aspects such as domestic economy and people's consumption. According to the national bureau of statistics, from

January to February in 2020, the total retail sales of social consumer goods was 5,213 billion yuan with a year-over-year data declining about 20.5 percent, which represented a sharp decrease caused by COVID-19 to the whole resident consumption again. When it comes to China, in order to avoid the bad spread of the virus becoming worse, most provinces in China have taken relevant epidemic-prevention measures, such as limiting people's gathering and closing management of communities. Resident's shopping activities for necessities would be strictly limited under this movement. Therefore, more and more people tend to buy things online. The Internet economy characterized by online shopping and online payment provides a buffer for China's stable consumption. First, online shopping can reduce people's physical store shopping frequency and then cut down most of the gatherings which can surely satisfy China's epidemic prevention requirements. Second, with the prosperous development of Internet finance, online shopping has become more and more mature. Both shopping process and shopping steps are quite convenient for residents, as a consequence, online shopping has won consumers' hearts. For example, many people prefer to put online shopping in the first place of their shopping choices. However, this pandemic really caused a devastating hit to the domestic express industry which could not easily

be ignored. Therefore, with the shutdown of the express industry, it was pretty difficult for residents to buy necessities through the Internet. In the latter half of 2020, with the steady recovery of the epidemic, the Chinese government gradually opened some physical stores to ensure the normal life of residents. What new effects would be caused by the online shopping was expected to be researched in the following paper.

Under the background of COVID-19 outbreak, how to provide more convenience to residents in this special period of time by using online shopping and Internet service was becoming an urgent issue to be addressed. Online shopping has become an important component of consumers' lives. By analyzing the consumption of consumers combined with market data in different stages during the COVID-19 epidemic, in order to give driving force to a benign and orderly development of our country's online shopping. Moreover, this research is also of great significance to the economic recovery after the COVID-19 epidemic and the realization of long-term economic goals in the future.

### **1.2. Literature Review**

According to the online shopping development during the COVID-19 pandemic, most scholars started to discuss mainly these aspects. The first factor we had to consider was how to improve consumption under the more steady recovery of the Chinese economy. Based on the exact pandemic development conditions, Zhihua Fu and Zhigang Wang indicated that the key to stabilizing consumption is to stabilize residents' income. And in the interests of stabilizing residents' income, the government needs to stabilize non-agricultural employment in the society [1], which grasps the essence of the relationship between consumption and employment. The second factor was consumer's psychology during the epidemic. Researchers found that during the epidemic period, residents' dependence on online shopping increased significantly, and the range of residents' shopping choices became more and more widely [2]. Online shopping can easily fill the vacancy of consumers' offline shopping requirements. Ping Xu pointed out that all industries should comply with the development of the current situation and accurately grasped the different preferences of consumers, combining offline shopping with online shopping and then create a new marketing pattern [3]. And then Zhen Qian revealed that it would cost about one year to recover consumers' confidence in the middle and even long term, and the expenses on housing, transportation, communication and medical treatment would increase [4].

These studies provided plenty of new ideas to the development space of online shopping we wanted to analyze, expounding the recent situation and problems of online shopping during COVID-19 pandemic in residents' income, consumption psychology and time, well-directed to this research paper's content. However, the above researchers had not analyzed the specific online shopping platform via data, but chose to give more macroscopic comments. This paper just fills the blank of the relevant micro data in online shopping platforms during COVID-19 pandemic.

### **1.3. Research Contents and Framework**

Based on all the information we collected, this research paper has made detailed theoretical analysis and empirical analysis according to the current situation of residents' consumption, at the same time, we also chose people's consumption pattern and preference in different stages during the COVID-19 pandemic to analyze and compare. What's more, this paper gave a series of optimization methods to the development of online shopping in China combining with people's consumption psychology during the COVID-19 pandemic. The framework of this paper is as follows, the first section in this paper is introduction, and the second part is theoretical analysis and empirical analysis, the third section of this paper is the results and discussion based on the theoretical analysis and empirical analysis, then the final part is conclusion.

## **2. METHODOLOGY**

### **2.1. Developments of Online Shopping Under the Epidemic**

In January 2020, as the beginning of the outbreak of COVID-19, it is easy to see that the sales and sales price of food and beverage online in 2020 is relatively higher than that of the same term of previous years, indicating that the epidemic may have changed the way of shopping for food and beverages to a certain extent. Among the narrow sorting of food and beverage, the impact of the fresh industry is more significant, affected by its short shelf life, high preservation requirements, high logistics and distribution requirements, and so on. When COVID-19 was coming, it became another option for people to stay at home and avoid crowds. Therefore, to take Fresh E-commerce (Missfresh Ltd) as the research object in the fresh food and beverage products category, whether COVID-19 is a major factor in promoting the further development of fresh electric business is studied.

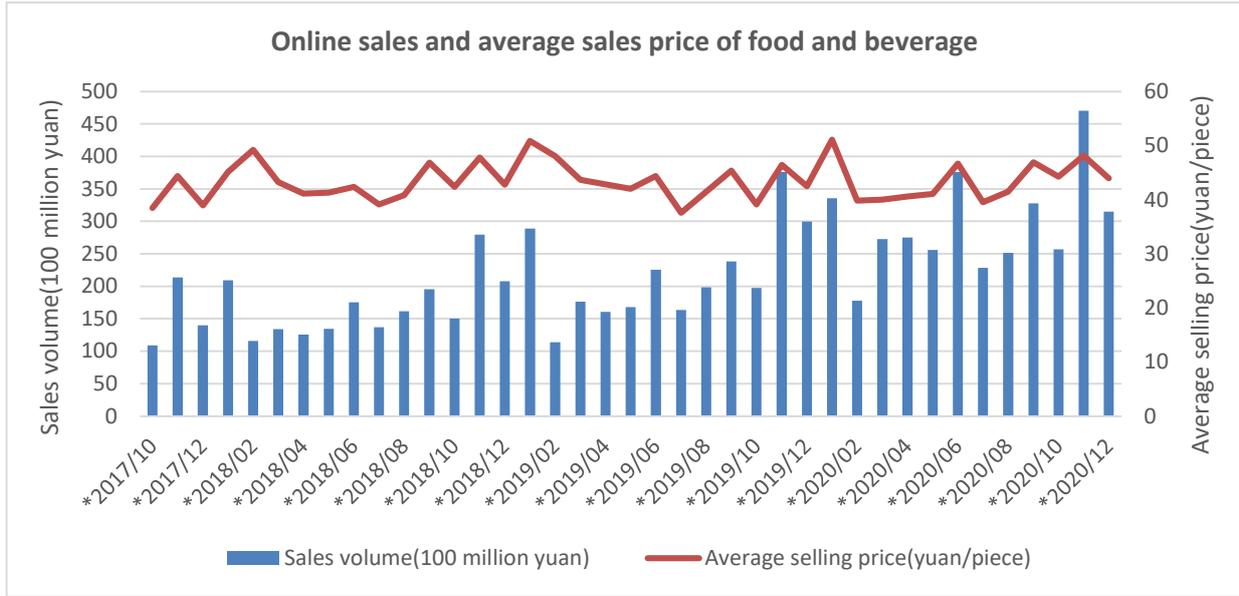


Figure.1 Online sales and average sales price of food and beverage from September 2017 to December 2020

## 2.2. Empirical Analysis of Online Shopping Consumption Mode Under the Epidemic

### 2.2.1. Data source

The data in this paper mainly comes from Missfresh Ltd’s financial report, financial balance sheet, income statement and cash flow statement., as well as Wind. All of the above data is from public resources.

### 2.2.2. Data analysis

This paper will use data analysis to analyze the impact of COVID-19 on online fresh e-commerce by comparing the changes of daily financial data and user stickiness before and after the epidemic.

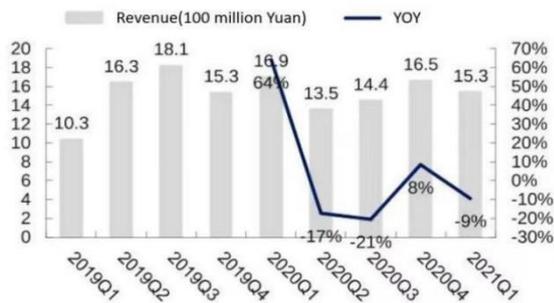
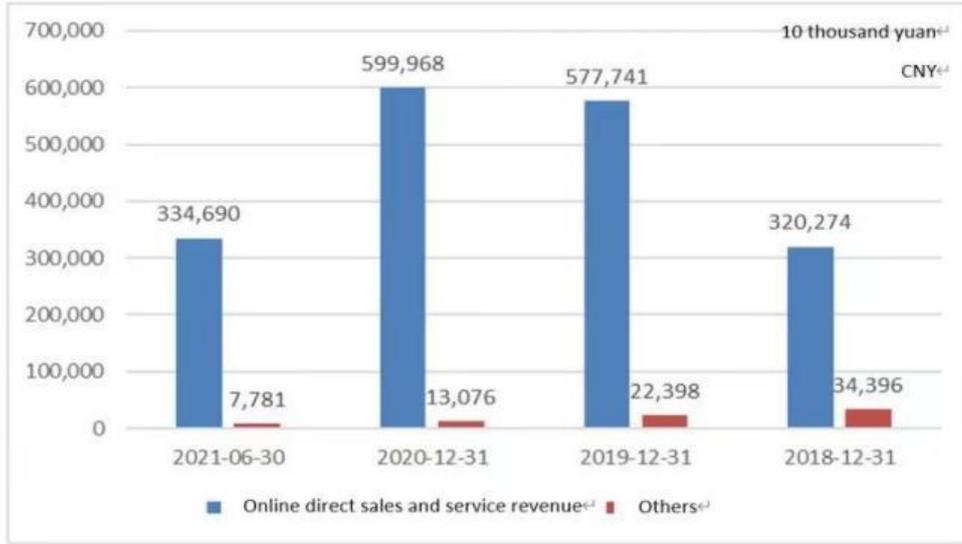


Figure2 Revenue and year-on-year growth rate of Missfresh Ltd from the first quarter of 2019 to the first quarter of 2021

From Figure 2, as the beginning of COVID-19’s concentrated outbreak around January 20, 2020, it shows that in the first quarter of 2020, the revenue of Missfresh Ltd had a rapid increase compared with the same period, which means that when people segregated at home, taking the crowd gathering in supermarkets and vegetable markets into account, they are preferred to

buy fresh food through e-commerce. By the second, third quarter of 2020, the income of Missfresh Ltd decreased relatively to that of the same period. It may be related to the warming weather. People under COVID-19 carefully considered the problem of keeping freshness and stopping bacteria breeding through transportation. Besides, in June 2020, the outbreak of COVID-19 in Beijing's Xinfadi has caused people to pay more attention to the source of fresh food. Finally, compared with the same period in 2019, the income of Missfresh Ltd in the fourth quarter of 2020 and the first quarter of 2021 has increased to a certain extent, which shows that the epidemic will make more people choose the purchase mode of online fresh e-commerce to a certain extent.

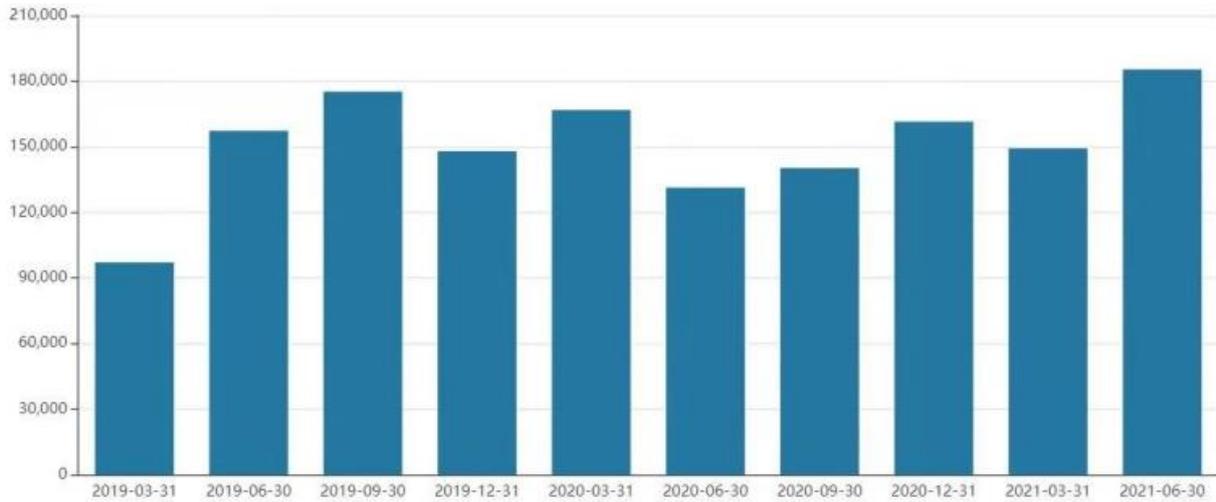
By observing Figure 2, it can be found that during the epidemic period, the daily Youxian has a significant increase in user growth and usage frequency, and the dividends brought by these increases are also extremely considerable, mainly reflected in the huge daily turnover of Youxian Growth rate and growth rate. At the beginning of the epidemic, Daily Fresh had a 64% increase in turnover compared with the same period last year, which is almost unimaginable for a large company that has been established for several years. Although the turnover declined in the first few months of the epidemic, it may be due to the unblocking of restaurants, supermarkets and other places after the epidemic, and everyone flocked to restaurants to eat, which led to the overall decline of the fresh food industry, rather than the daily quality of fresh food itself. At the same time, a few months after the end of the epidemic, Daily Youxian resumed its turnover growth. Generally speaking, the huge increase in the number of users and frequency brought by the epidemic to the daily fresh food is perfectly reflected in the increase in turnover.



**Figure.3** Compositions of operating revenue from Missfresh Ltd’s Annual Report

It can be seen from Figure 3 that in 2020, the online direct sales and service revenue of Missfresh Ltd increased compared with 2018 and 2019, and the proportion of online direct sales and service revenue in the total operating revenue incremented as well; through

the medium-term data of 2021, it can also be roughly predicted that the online direct sales and service revenue of Missfresh Ltd will continue to raise in 2021, and the proportion of online direct sales and service revenue in operating revenue will also continue to increase.



**Figure.4** Online direct sales and service revenue of Missfresh Ltd from the first quarter of 2019 to the second quarter of 2021

From Figure 4, as the beginning of COVID-19 in 2020, it indicates that the changes of online direct sales and service incomes was basically the same as that of total business revenue. That is, when the COVID-19 broke out in the first quarter of 2020, Missfresh Ltd’s online sales and service income showed a dramatic increase over the same period. Due to climatic reasons, the online direct sales and service revenue of Missfresh Ltd dropped in the second and third quarters of 2020 compared with the same period. Besides, in the fourth quarter of 2020 and the first quarter of 2021, compared with the data in the same period before the epidemic,

the revenue from online direct sales and services increased, which indicates that the epidemic has affected the fresh shopping methods of some people to a certain extent; at the same time, the data of second quarter presented in Figure 4 reflected an increase in the second quarter compared with the same period in 2019 and 2020. It can be inferred that, except for the fact of weather, excluding the outbreak of COVID-19 in the second quarter of 2020, COVID-19 has indeed had a positive impact on the fresh online shopping mode to a certain extent.

**Table 1.** Comparison of Missfresh Ltd’s users before and after pandemic

	2019.2-2019.3 (before the pandemic)	2020.2-2020.3 (after the pandemic)	YOY Growth
Application’s Daily active users (thousand)	664	1361	105.1%
WeChat mini program Daily active users (thousand)	394	559	42.0%
New consumers (thousand)	664	2174	227.7%

Table 1 shows that after the outbreak of COVID-19, the daily active users of APP of Missfresh Ltd rose to 1 million 361 thousand people from 664 thousand before the epidemic, an increase of 105.1% over the same period last year, while the active users of WeChat's small programs also increased. The total number of new

customers increased by 227.7% over the same period last year. This indicates that COVID-19 has changed many people's thinking mode of traditional offline purchasing so that they will use online fresh apps and small programs to purchase fresh food as another option to select fresh food during the serious isolation policies.

**Table2.** Urban distribution of the fresh e-commerce platform usage frequency of Chinese interviewees in 2021

	1 <sup>st</sup> tire	New 1 <sup>st</sup> tire	2 <sup>nd</sup> tire	3 <sup>rd</sup> tire	4 <sup>th</sup> tire
Once a week	16.1%	18.5%	13.2%	10.1%	23.6%
2-3 times a week	40.7%	53.8%	43.4%	32.6%	25.5%
4-5 times a week	14.4%	8.4%	19.1%	22.5%	14.5%
6-7 times a week	11.0%	3.4%	2.2%	4.5%	0%
Rarely used	17.8%	16%	22.1%	30.3%	36.4%

The data in Table 3 comes from the daily excellent fresh financial report. By observing Table 2, it can be found that in most cities (first tier cities to third tier cities), the user group mainly uses Missfresh Ltd twice or three times a week. That is, about once every two days. For the purchase of fresh goods, using it every two days can be regarded as a high frequency of use. Besides, there are many users applying more than once a week. Although the main frequency of use in the

fourth tier cities is hardly used, considering that the fourth tier cities are less affected by the epidemic, normal shopping methods such as supermarkets may not be greatly affected, and farmers may grow their afford on their own in the fourth tier cities. Therefore, the impact of the data of the fourth tier cities on the total data in the epidemic situation can be ignored. In general, a large number of users in various cities use Missfresh Ltd with high frequency.

**Table3.** Daily active users of Meiri Youxian

	Before pandemic ( 19.2-19.3 )	During pandemic ( 20.2-20.3 )	Growth
App daily active	664k	1361k	105.1%
Small program daily active	394k	559k	42%
New customers	664k	2174k	227.7%

By observation table 3, it can be found that during the selected period and the same period last year, except for small programs, the daily active and new user registrations of the daily new app have increased significantly at almost 100% and 200%. The daily increase in mini-programs is also 42%, which is not as

significant as the other two, but it is also not a slight increase. Taken together, in the two most severe months of the pandemic, the number of daily active users of Meiri Youxian has dramatically increased. One of the most notable increases is the increase in new users, reaching 2.17 million, which has tripled compared to

last year. This shows that during the pandemic, many residents chose to use Meiri Youxian for shopping.

### 3. RESULTS AND DISCUSSION

From the above analysis, it can be found that the epidemic's impact on online fresh food shopping is very significant. Take Meiri Youxian as an example, its daily active users, new users, user frequency, and turnover have explosive growth. This can show that the impact of the epidemic on the fresh food industry is still very huge. The reason is that most supermarkets and vegetable markets in China have taken measures to close during the epidemic. At the same time, residents are required to stay at home and not go out. However, the rigid demand for food, meat, vegetables, eggs, and other daily necessities will not be due to supermarkets closed and stopped. This did online shopping, the only way to obtain fresh ingredients at that time, undertook the massive demand of the vast majority of Chinese residents and ushered in a spurt of growth. Indeed, the success of online fresh food shopping represented by Daily Fresh Food seems to depend on the "privileges" brought about by the epidemic, but this does not fully explain that the current online fresh food online shopping companies are entirely dependent on the dividends epidemic. From the above chart, it can be found that although various indicators and data have increased significantly during the epidemic, the data before the epidemic has been considerable. After the epidemic has ended, it has not been affected by the reopening of offline fresh food purchase channels such as supermarket vegetable markets. Stop growth or even go backward. Although not as significant as the increase during the epidemic, it still maintained a specific slow and benign growth. This shows that compared with traditional offline shopping channels at any time, today when the Internet dominates life, the new online fresh food shopping channels still have considerable competitiveness and even tend to surpass traditional offline shopping. At present, the development of the online fresh food shopping industry has not yet matured. Many Internet giants are still investing in their fresh food apps. The development of the entire industry is in an intense period. Combined with the maturity of online shopping itself, we can infer that online fresh food shopping will continue to grow in the next three to five years, and to some extent, replace traditional offline shopping methods. For future development, online shopping should actively integrate with current emerging technologies, such as 5g. For example, take advantage of the unique advantages of 5g, such as fast speed, large bandwidth, and low latency, to carry out services such as an online preview of products and a selection of products. At the same time, we need to pay attention to solving some of the main shortcomings of online fresh food, such as the guarantee of freshness, and further research on related solutions is needed to

improve the online fresh food shopping model further.

### 4. CONCLUSION

Under the background of the breakout of COVID-19 pandemic, in order to protect people's safety and control the spread of this epidemic disease, Chinese government had taken qualities of epidemic-prevention measures, such as limiting people's gathering and reducing offline shopping, as a result, the offline shopping activities of Chinese residents were limited to some certain extent. Requirements of supporting daily lives could not be fully met. However, during the rapid-developed Internet era, online shopping had become the first place in consumers' hearts with its convenience and quick efficiency. This paper tries to analyze through charts combined with data, taking the Missfresh Ltd app as an example. Comparing the increase of Missfresh Ltd financial data before and after COVID-19 pandemic and the changes of residents' usage frequency of Missfresh Ltd app. It turned out that the breakout of COVID-19 pandemic had a remarkable and positive effect on a series of online shopping apps, for instance Missfresh Ltd. Whether the sharp increase of online users' amount or the growth of sales service revenue in Missfresh Ltd, both illustrating these kinds of online shopping apps were able to satisfy residents' consumption requirements to a great extent during COVID-19 pandemic. And it also relieved resident's material shortage emergencies while the disease. The success of Missfresh Ltd also provided a new development pattern to those small and micro enterprises which closed down during COVID-19 pandemic. Moreover, there still existed great conditions and policies provided by the government to push all the small and micro enterprises forward. Nevertheless, online shopping also gained plenty of unsolved problems, such as guarantee of freshness of fresh food and transportation cost control of fresh food. The emergence of fresh apps such as Missfresh Ltd during COVID-19 pandemic is enough to prove that with the vigorous development of the Internet economy, online shopping has provided greater convenience to human's lives, and the era of transformation of shopping patterns has come.

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