

# Will the Food Delivery Industry Be Monopolized?

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## ABSTRACT

Nowadays, new technology is growing fast. Shopping and ordering food via the Internet becomes popular in daily life. Especially during the Covid-19 pandemic, the food delivery market was growing bigger and bigger. This paper aims to study the possibility of the food delivery industry becoming monopolized. We analyze the issue from three perspectives. First, market segmentation can have an impact on industry competition. It is difficult to monopolize the food delivery industry because of geographical distance and different consumer preferences among different areas. Second, the food delivery company is a typical two-sided platform. The platform establishes balanced competition. The platform participants are not individuals in the food delivery industry. If the pricing structure changes, it will influence consumers' demand. Since the competitive pressure in the industry, it is difficult to maintain customer. We also look at the issue from the angle of game theory. In a Money Burn game, whether the incumbent company becomes a monopoly depends on different situations. In the food delivery industry, each delivery company is a participant, and each participant's gains or losses largely depend on the responses of other participants. The Money Burn strategy would reduce the possibility of new entrances, therefore reinforcing the incumbent company's market power.

**Keywords:** DoorDash, Market Segmentation, Two-sided platform, Game Theory.

## 1. INTRODUCTION

According to the article from Ajot, in this pandemic, the total orders of the food delivery industry are growing from 539 million in 2019 to 704.7 million in 2020. Also, there's an expectation for the food delivery industry users to reach over 821 million in 2021 [1]. And the growing orders mean that the pandemic lets more and more people try food delivery services. The market is growing quite rapidly. At the same time, the market shares of several food delivery company are changing from 17% (DoorDash), 27% (Uber Eats), 39% (GrubHub), 11% (Postmates), 6% (other) in January 2018 to 50% (DoorDash), 26% (Uber Eats), 16% (GrubHub), 7% (Postmates), 1% (other) in October 2020 [2]. As we could see, DoorDash, which was founded by three Stanford University students in 2013, is thriving, and it may gain more than half of the market. In this such an oligopoly market, the market can be monopolized. Based on this possibility, this paper aims to argue whether the food delivery industry would be monopolized in the future.

Compared with the ride-hailing industry, food

delivery shares similar characteristics with ride-hailing industry, such as low technology and low trade barriers. Nevertheless, as we could see, in this pandemic, the food industry market is growing, and the ride hailing industry market is declining. And we predict that the food delivery industry has a promising, profitable future. The profitable market will attract more new entrants. So, in this paper, we will describe several research approaches.

The first is about segmentation, including geographic segmentation, price segmentation, psychological segmentation. DoorDash is a vivid example here. Through the whole development history in DoorDash prosperity, we found that Stanford University had funded DoorDash. The funders only delivered the food to the customers in the Bay area and Palo Alto. And DoorDash hasn't expanded the business to all states. That's the geographic segmentation.

The second is about bilateral platform theory. A bilateral platform is one of the characters that the food delivery industry shares with the ride hailing industry. More specifically, the price change will impact the demand and the orders on the platform. That's one

character of the bilateral platform. Based on the theory and the real situation that there're several supplier platforms in the market, the customers could choose any suppliers. The platform, which is the supplier, doesn't have the chance of bargaining with the customers. On the contrary, the customers could choose the suppliers, and customers' decision will affect the platforms' decision.

And last, the difficulty that the platform's difficulty is not only the decisions from customers but also the other competitors. The platform should decide to cater to the customers. At the same time, the platform also needs to make more decisions to be countermeasures and address the difficulties from other competitors. In the third part, the paper will discuss game theory. The game theory describes such an interaction between every player, and each player would affect others and be affected by others' actions. We could perfectly use the Game Theory model on the food delivery market. Because there're already several companies of food delivery companies in the market, it corresponds to the multiple players in the Game Theory study. And not only the Game Theory itself, but we have multiple theories under Game theory, such as "money burn" strategy and also whether the food delivery companies collaborate.

The following article will be organized into the segmentation section, bilateral platform section, game theory section, the conclusion, and the reference.

## **2. DISCUSSION**

### ***2.1. Market Segmentation***

As more and more people become accustomed to online shopping and ordering food, food delivery platforms have developed rapidly in the past decade. First, we want to talk about market segmentation. These include geographic segmentation, price segmentation, psychological or lifestyle segmentation, etc. [3]. Geographical market segmentation is common in the food delivery industry. For example, DoorDash initially only delivered food near Stanford University and slowly opened up markets in other regions. When a company focuses on a limited geographic area to achieve the concentration of power, it will reach the level of monopoly earlier than other companies in that area. But if several companies compete in the same area similarly, it will not be easy to monopolize the industry.

In terms of price segmentation, people will decide which platform to use to order food based on social influence, convenience, pleasure motives, values, and customized prices [4]. For example, in Los Angeles, HungryPanda discounts the first 5 orders, so many consumers will use this platform to process these 5 orders. But later, consumers will find which platform has more discounts or compare the delivery time to decide which platform to use. This will result in no platform that can

always support consumers. Therefore, this industry will not be easily monopolized.

Due to the different business strategies of each platform, some consumers are sometimes lost. This provides an opportunity for competitors to attract consumers [5]. This has led to the joining of one food delivery company after another, preventing the industry monopoly of several food delivery platforms. This also shows that the food delivery industry has not yet reached saturation, and there is still room for development. In addition, in different regions, some small takeaway platforms are also occupying market space. For example, in Los Angeles, HungryPanda continues to expand the market, preventing several leading food delivery platforms such as DoorDash from monopolizing the California market and even the US market.

In psychological or lifestyle segmentation, people gradually become dependent on the Internet, which has also contributed to changes in consumer preferences. [6] According to the research results, the food delivery platform is more punctual, and the discount is better, making the food delivery platform attractive to most consumers. Therefore, if new platform competitors emerge in the food delivery platform industry, these two points will be the key. This determines whether a platform can maintain and attract consumers. This reflects from the side which platform has more discounts and delivery times and will occupy a larger market space. This also shows that it is difficult to monopolize the food delivery industry because discounts are always competitive.

Online ordering is a global trend, and more and more young people like to order online. This results in at least one main delivery platform for each different region. Such as DoorDash and UberEat in the United States, Meituan, and Ele.me in China [7]. Because of the different conditions and people's lifestyles in each region, people will have different choices. From the side, it is difficult to achieve a global monopoly on the same food delivery platform. Just like DoorDash, although it has become the leading food delivery platform in the United States, we think it is difficult for DoorDash to reach the leading level in other countries. Because the differences in each region will lead to changes in consumers' choice of external selling platforms. Assuming DoorDash enters the Chinese market, it is difficult for people to move from the Meituan and Ele.me platforms to the DoorDash platform because of differences in market segmentation.

### ***2.2. Bilateral Platform***

Since people's living standards get improved, and the impact of the epidemic situation, more and more people have formed a sense of consumption and spend money on takeout. Therefore, the food delivery industry has begun to develop rapidly, mainly including two aspects. More

and more food delivery platforms appeared, and the scale of consumption is growing. The relationship between demand and supply is complementary. This principle is also applicable to the food delivery industry. Consumers' demand for takeaway is gradually increasing, promoting the development of the takeaway platform to actively respond to consumer demand. Currently, in the U.S. takeout industry, the main market participants are DoorDash, uber eats, and GrubHub. According to the statistics in October 2020, the market share ratio of DoorDash, uber eats, and Grubhub are about 5:3:2. GrubHub, founded in 2004, is a long-standing food distribution company. UberEats launched its first service in Los Angeles in 2016. It can be concluded from the above context that DoorDash, born in 2013, has developed rapidly in the United States, gradually leading its competitors Uber Eats and GrubHub [8]. Moreover, DoorDash was listed in the United States at the end of December 2020, and dozens of first-line investment banks such as Goldman Sachs and Royal Bank of Canada participated in the IPO underwriting of DoorDash. Under the strong development momentum, DoorDash tends to monopolize the food delivery industry in the United States.

Based on the above background, this paper takes three American food delivery enterprises, DoorDash, uber eats, and GrubHub, as examples and uses the theoretical basis of the two-sided platform to illustrate almost no industry monopoly in the food delivery industry in the United States. Bilateral platform theory means that platform enterprises can provide services for bilateral platform participants to obtain corresponding profits. Even though DoorDash has more capital and users, the market environment is not single and unchanged, and the possibility of becoming an industry monopoly is very low.

This discussion part mainly includes three aspects: the introduction of bilateral platform theory; the relationship between food delivery and bilateral platform theory; and why in the food delivery industry, the possibility of monopoly is very small.

The development of Internet technology has brought more and more unimaginable business models. A bilateral platform has become a new business model in the Internet era. Rochet and Tirole define the two-sided market from the perspective of pricing structure: under a given price level, the number of transactions on the platform will change according to the price structure. More specifically, the price change of one of the participants in the bilateral platform will impact the demand and transaction of the platform [9]. The participants in the bilateral market are two different types of customers, which generate trading behavior through the platform for a certain demand. When two or more platforms are competing, users' decision-making profoundly impacts other platforms and even affects the

platform's pricing. The platform pricing is mentioned because, in the market environment of bilateral platforms, the price can more intuitively reflect the market situation and explain why there is almost no monopoly in the food delivery industry.

Based on the understanding of bilateral platform theory and pricing method, it is necessary to master the relationship between the food delivery industry and bilateral platform theory. From the perspective of market participants, different types of customers refer to food demanders and food providers in the food delivery industry. In addition, another important participant in the platform service provider. In the link of food delivery, as an information sharer, the platform does not participate in the actual trading activities of both parties [10]. From the perspective of the pricing structure of bilateral platforms, the choice of takeout demanders for one platform has a profound impact on the pricing strategies of other platforms. When more and more consumers choose DoorDash, its pricing will increase with the increase of demand elasticity. UberEats and GrubHub will reduce their platform prices due to the decrease of market demand to attract users. In the bilateral platform theory, the charging standard of the platform for the participants will increase with the profit. This kind of slanting pricing method affects the internal operation of the platform and affects the prices of other takeout platforms.

Even with the rapid development of DoorDash, there is almost no monopoly in the takeout industry because of the pricing strategies of platforms in the two-sided market. The pricing structure of bilateral platforms is complex. As mentioned above, the platform sets different price levels for the participants in the food delivery industry, i.e., takeout demanders and providers. Due to the influence of the market competition environment, the increase of demand elasticity of a certain platform will lead to the price growth of each link, which will affect the price of other platforms in the market. The change of price brings great demand change to other competitive platforms [11]. Although DoorDash now has more users in the United States, the market environment is not static. UberEats, GrubHub, or other takeaway platforms will adopt more ways to cope with the reduced market share, such as increasing subsidies to sellers and reducing buyers' costs. When takeout customers know that they can buy the same food at a lower price on uber eats, GrubHub, or other takeout platforms, they will give up DoorDash.

In the food delivery industry, each party can benefit from the increase in participants on the other side. Specifically, the increase of consumer demand for a takeout platform will attract more businesses to join the platform; On the other hand, when the more businesses on a platform, the choices consumers face increase, which attracts consumers to use the platform to a large extent. More and more enterprises will try their best to

develop their platform in this field after seeing the development prospect of the food delivery industry. In other words, market dividends attract more and more investors to turn their eyes to the industry [12]. DoorDash faces more and more competitors, not just Uber Eats, GrubHub. In the bilateral market environment, market share can reflect the development trend of an enterprise, but it cannot reflect the market power it has. The price of any user in a bilateral market platform is influenced by other platform participants and determines the competitive strength of the industry. The platform participants are not single in the food delivery industry, and there are homogeneous platforms in the market.

Through the discussion in the second part, we have a simple understanding of the market pricing of bilateral platforms. The food delivery platform needs to establish different price levels and determine the interaction between the buyer and the seller, namely the food demander and the provider. The healthy and stable development of the two-side platforms cannot be separated from the complexity of user transactions on the platform. This complexity ensures the orderly competition of the market to some extent.

In short, on the one hand, the competition pressure in the food delivery industry will be increasing due to the increase of market participants. In this case, it is difficult for DoorDash to maintain customer loyalty. On the other hand, because of the characteristics of the bilateral market environment and the particularity of pricing strategy, no food delivery enterprises will make the price unchanged. The price change affects the choice of the platform for the demander. With the decrease in demand, the merchants in the platform will turn their eyes to a platform with more profit potential. In turn, the decrease of businesses will weaken the choice of consumers, and the demand will decrease accordingly. Through the above analysis, even if DoorDash now has a large market share, there will be no monopoly.

### **2.3. Game Theory and Cash Burn strategy**

While food delivery companies, DoorDash and Uber Eats have both gone public and captured significant markets, the companies are still fighting each other for market share. Both DoorDash and Uber Eats are in the low user viscosity, high labor cost, and single profit model have become the survival dilemma of all delivery companies. The companies all have the ambition that they want to be the only supplier in the market. It would boost their sales and profits.

The issue about “Will the food delivery be monopolized or not”, game theory is one of the important factors. This part of the paper aims to argue that the most basic thing about whether the food delivery industry will be monopolized is a game between each single food delivery company. One company becoming monopoly

cooperate of food delivery means it won the game between a lot of competitors. The previous study has shown that there’s an interaction between every player in this model, and each player would affect others and be affected by others’ actions [13]. The food delivery industry shares the same characteristic with Game Theory. Because there’re already several companies of food delivery companies in the market, it corresponds to the multiple players in the Game Theory study.

Under the Game Theory, there’s a “Cash Burn” Strategies. The study of Startups and “Cash Burn” Strategies [14] shows that some startups put more effort into grabbing more market share and putting significant investments or capital in user acquisition. And the “Cash Burn” strategy is supposed to attract more and more new users and increase the market's total value, grabbing more share in the market. Nevertheless, there’s not only one company in the market, so every company would like to use this strategy to gain more share in the market and beat other companies.

Only seven years, DoorDash has already gained 33 percent of the market share, more than it has before. We expect that DoorDash will gain more and more with this expanding rate of the business. At that time, DoorDash would have enough capital and cash flow to put on a “Money Burn” strategy. Once some new entrants of the food delivery industry want to engage in the food delivery business, DoorDash, the incumbent with a huge amount of capital, could eliminate the new opponents. It’s about game theory. Even though both of new entrants of feed delivery and DoorDash don’t know how much capital that each of them has and how much money that each of them would like to put on “Money Burn” strategy, one will try to engage in the business to make money and the other one will try to eliminate the startups.

Though the previous point has some rationalities, in some other cases, “Money Burn” wouldn’t work all the time. Both articles written By Campbell and By McClure talked about that if companies burn cash too fast or we could say they have a high rate of money burn, they will have the risk of running out of money and going out of business [15, 16]. Also, the study of Patrick Campbell shows to us the fact that about 82% of the startups failed or are destroyed because of cash flow problems, so it means ignoring the burn rate is not an option [15]. So, here’s another game theory between the companies, if you spend much capital or investment on beating the companies or attracting customers, it may ruin the cash flows. The company has to give up something because the burn rate identifies necessary budget cuts [15]. The above facts and the statistics predict that the monopoly of the food delivery industry may have failed because of the capital chain rupture of the huge company that wants to be the monopoly.

Except for the two situations that we mentioned above, there may be another scenario that happens. It’s

about the Prisoner's Dilemma, the is about that "Benefiting oneself is not always wrong, of course, and benefiting others at the expense of oneself is not always morally required. However, in the prisoner's dilemma game, both players prefer the outcome with the altruistic moves to that with the selfish moves." from "Prisoner's dilemma" [17]. The study of Axelrod talks about the effective choice of the prisoner's dilemma [18]. In an experiment, research shows that it's not worth it to defect or betray others all the time because that wouldn't benefit any player of the game. The best way or the most effective way is cooperating with each other. The food delivery industry has the same characteristics as the prisoner's dilemma as well. And the most effective way for these companies is to cooperate with each other. They may have an alliance with each other, and they may have a contract and a regulation for each other. Nevertheless, that would be one of the monopoly situations.

Overall, we suspect that there might be a monopoly situation. We are not sure that either a single company monopoly situation or they would be an alliance. The market is so huge, and there won't be easy for a specific company that is a monopoly.

### 3. CONCLUSION

Through market segmentation, the theoretical basis of using bilateral platforms, and game theory, we analyzed whether the US food delivery industry will be monopolized. We separately analyzed geographic location, price differences, and consumer lifestyle differences in the market analysis part. Consumers will not stay on the same food delivery platform for a long time, such as DoorDash, UberEats and so on. This reflects that the risk of monopoly in the food delivery industry is small. We use the theory of bilateral platforms to show that there is no monopoly in the US food delivery industry. Changes in prices will have a great impact on foreign sales platforms, which can intuitively reflect the industry's monopoly. Because of the existence of industry competition, this has made it more difficult for the food delivery platform to monopolize the market. In game theory, the monopoly situation will change. In the future, DoorDash may consider implementing a "burning money" strategy to repel rival companies to achieve industry monopoly. Still, this strategy has the risk of the bankruptcy-the capital chain is broken. To prevent this from happening, several companies may choose to cooperate and monopolize the food delivery industry in the form of alliances. With the control of Covid-19, competition in the food delivery industry will become more intense. This is even more difficult for a food delivery platform like DoorDash to achieve a monopoly. However, as the epidemic changes, the food delivery industry will usher in certain adjustments, and a crowd-out effect may occur. It will make food delivery platforms like DoorDash still have a chance to achieve

industry monopoly in the future.

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