

# ***Multihoming Competition of Delivery Platforms in the Two-Sided Market and Its Effects on Social Welfare***

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**Abstract:** This paper analyzes the platform competition in a differentiated setting (delivery platform) and the effects of social welfare in two-sided markets in the multi-homing platform. Also identifies interdependence between the two sides served by the same platform. Considering the reality of the economy and the diversity of consumer behavior. Single-homing and multihoming in the real economy is relatively small. The vast majority of users in the platforms of two-sided markets belong to partial multi-homing. Through research, it is found that partial multi-homing of delivery platforms is decided by consumer differentiation and platform differentiation. In particular, higher customer loyalty and product differentiation means higher competitiveness in the market.

**Keyword:** multihoming, platform, two-side market, competition, social welfare

## **1. Introduction**

Multihoming platforms often appear in real economic life, and the influence of platform and user differentiation causes the difference between bilateral platforms. This paper will discuss multihoming platform competition from the perspective of delivery platform pricing differentiation, user segmentation, and loyalty, and mention how the platform can improve social welfare in the future. Since the delivery platform market is a typical bilateral market with bilateral market network effect externalities, multiple attribution, asymmetric pricing and complementary demand. Delivery platform companies often offer free or even subsidized services to consumers while charging restaurant merchants. Reasons for competition include the entry behavior of delivery platforms that often develop user habits, enhance user experience, and subsidies to quickly capture the market. At the same time the market leader also tends to take subsidies to lower prices to drive potential competitors out of that market area. However, differentiated products and services towards different segments of customers can effectively enhance the competitiveness.

This paper analyzes the platform competition in a differentiated setting specifically under the delivery platform and the effects of social welfare in two-sided markets in the multihoming platform. In order to maximize customers' network benefits in today's world, customers always compare prices through multiple delivery platforms and make different purchasing decisions. The corona-

virus pandemic, which has forced a series of lockdowns across the US, has caused a huge shock to the restaurant industry, but it has also created a high growth opportunity for food delivery platforms. The paper is partly motivated by the changing market share of food delivery platforms in the US, with the top spot changing three times in five years. Uber Eats gradually led all food delivery platforms in market share starting in 2016, but DoorDash took the top in 2020 and established a commanding lead. Even after Uber acquired Postmates, Uber Eats still has maintained a 20-30% market share, hard to overtake DoorDash in a short period.

As a result, the final research observation found that the most significant feature of a delivery platform in a bilateral market is the bilateral network effect, where under the situation of accumulating the number of businesses on the delivery platform gives customers more choices and brings about a larger pool of customers. The larger pool of customers will in turn attract a larger pool of merchants. In the process of merchant aggregation, rules are continuously adopted to avoid letting any party leave the platform. Once the scale of the platform exceeds the zero boundary point, it is difficult for other platforms to attempt to surpass it, and the huge commercial value of the platform is created at this time.

## 2. Two side market related with specific delivery market

A two-side market simply defined by direct interaction between supplier and customer creates value through intermediary platforms. Values are provided and received by consumers and service providers. Uber eats and doordash are the typical two-sided market platforms. From the data which was provided by Mckinsey, Bloomberg second measure, this paper analyzes the market share of the different U.S. delivery platforms and the meal delivery - monthly sales of the different U.S. delivery platforms.

Figure 1 shows that UberEats' market share jumped from about 5% in 2016 to overtake Grubhub's 70% share and become the leader in FOOD delivery platforms in the US in 2018 and 2019. Starting in 2018, the US online food delivery industry entered a period of consolidation, starting with DoorDash's push into suburban and chain brands, which quickly gained market share and started to overtake Uber Eats in the 2019-20 space. By the time it went public in October 2020, DoorDash had 50 percent of the U.S. food delivery market and 58 percent of the suburban market, making it the largest delivery service in the country.

Due to the epidemic, people's demand for online food delivery platforms has increased in the past two years. Undoubtedly, the usage rate will decrease to some extent after the epidemic ends. But you can still see in the figure 2, DoorDash's 57% sales are roughly double uber Eats' 23%. Through a simple comparison, the gap of monthly sales and market share between DoorDash and Uber Eats has a lot to do with their platforms and customer differentiation.

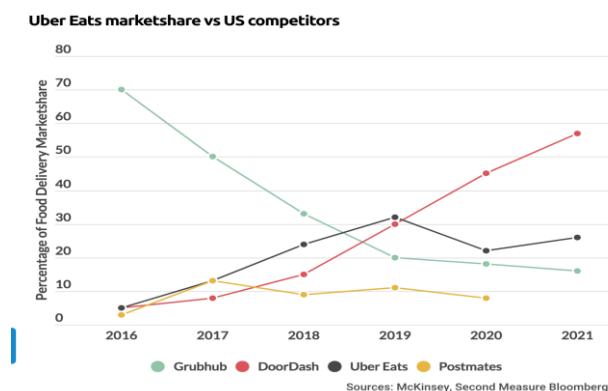


Figure 1: Uber eats market share vs US competitors [1].

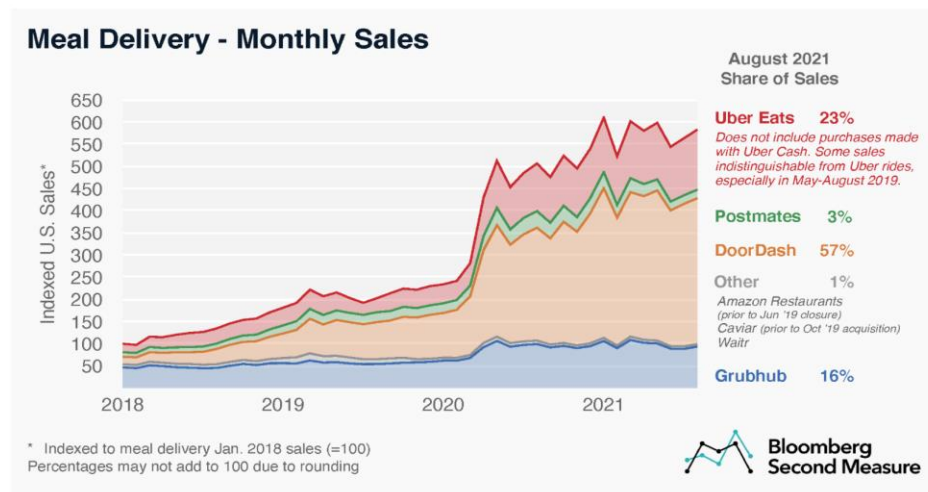


Figure 2: Meal Delivery - Monthly Sales [2].

### 3. Consumer-side differentiation

#### 3.1. Audience segmentation

If product market competition is tough, sellers avoid competitors by joining different platforms [3].

Audience segmentation is the basis for the platform to select target markets and formulate market strategies. In the fierce market competition, the market shares of different segments are different. Market segmentation helps reduce platform competition. Compared with keeping a low price on the platform, segmentation finds the potential needs of consumers and meets it can make profits without fierce market competition, thus standing out and increasing market share.

According to DoorDash's release, they started to build connections with suburban markets and chains to focus on the suburbs and lower-tier cities at the beginning. Families in these cities are often far away from restaurants and need more delivery services. The service needs of this segment of the population have long been neglected. Delivery platforms like Uber Eats and GrubHub have largely prioritized large, densely populated cities and focused on independent restaurants in first-tier U.S. cities on both coasts, with little consideration for residents of suburbs and lower-tier cities. DoorDash's focus on this less competitive segment and their needs has also helped it gain a lot of market share. When ordering takeout, suburban and lower-line producers tend to order more items per household, which means higher unit prices, better transportation, easier parking, and faster growth than in cities. After gaining ground in the suburbs, DoorDash is buying into urban centers.

#### 3.2. Consumer loyalty

According to the Multihoming and oligopolistic platform competition [4], users (buyers and sellers) have heterogeneous valuations over transaction (or interaction) benefits. All users can costlessly join multiple platforms. Platforms are differentiated from the buyers' perspective but are identical from the sellers' perspective. The above situation reveals a critical fact that in many two-sided market settings, sellers tend to consider competing platforms as more or less homogenous, while customers in most of their time have idiosyncratic preferences, which means that when facing the choices of platforms, They usually have their own preference over others. This leads to a result that fewer customers are loyal to a single service platform nowadays, which makes consumer loyalty an significant factor of affecting the delivery platform market share.

Table 1: The number of customers who used a competitor [2].

	Grubhub	DoorDash	Uber Eats	Postmates
Grubhub	--	40%	22%	8%
DoorDash	24%	--	21%	7%
Uber Eats	26%	41%	--	10%
Postmates	30%	41%	29%	--

A fraction of buyers may be loyal to a platform [3]. The classic “competitive bottleneck” result obtained by Armstrong and Armstrong and Wright [5] also shows that the loyalty of buyers will fluctuate with different factors in the current market. Seller's demand elasticity is affected by buyer's loyalty, and high loyalty platforms can charge high fixed fees.

Due to fierce competition among delivery service platforms, Platforms with high loyalty will generally take a larger share of the mark. As shown in table 1, Bloomberg Second Measures’s research, DoorDash saw 58 % of customers use their platform as their first choice in the Second quarter of 2021. However, as for Uber Eats, the customer percentage of choosing Uber Eats as their first choice is 43 %. Platforms including Grubhub, Uber Eats, Postmates, and Waitr all have nearly 40% of their users using DoorDash simultaneously. DoorDash, the largest delivery platform in the US, still has more than 20% of its users using Grubhub and UberEats at the same time.

In the chart of market share, Doordash surpassed Uber Eats in 2019 and 2020. In December 2019, DoorDash made a partnership with Chase to give free DashPass memberships to millions of credit cardholders in December 2019. Through its partnership with Chase and free DashPass memberships, Doordash has accumulated many loyal customers. DashPass Memberships increase the number of customers who use DoorDash because compared with other platforms, they can consume on the DoorDash platform with more favorable prices and discounts.

## 4. Platform-side differentiation

### 4.1. Platform differentiation

The Hotelling model [5] from Armstrong studies the impact of horizontal differences between competing platform platforms on platform pricing, the study concluded that the greater the level of differences between platforms, the greater the power of the platform in the market, and the greater the profit and price markup. The paper analyzes the effects of tying on market competition and social welfare in two-sided markets when economic agents can engage in multi-homing by participating in multiple platforms to reap maximal network effect [6]. From Belleflamme and Peitz [7], in this paper it addresses how seller competition affects platform pricing, product variety, and the number of platforms that carry trade.

### 4.2. Product differentiation

Armstrong and Wright’s [5] essay provides a framework for analyzing two-sided markets that allow for different degrees of product differentiation on each side of the market. In delivery platforms, consumers only have one or two delivery apps installed on their phones, so the key to winning the

market for food delivery companies is to get as big as possible and improve operational efficiency.

### 4.3. Per-transaction charges

According to a typical DoorDash order, when a user places an order for \$22.40 in food on the DoorDash platform, the actual payment ends up being \$32.90, including \$1.70 in GST, \$3.30 in tips and \$5.50 in service fees. DoorDash then distributes the funds to the merchant and the delivery person, with the merchant receiving \$20.10, the delivery person receiving \$7.90, and the DoorDash platform leaving \$4.90 to form revenue.

## 5. Social welfare

Tying does not automatically suspend the competition between rival platforms under the situation of some platforms' own exclusive contents. Thus, the total increasing transaction happening in the market increases the total surplus with tying when multihoming is allowed. Bundling will allow more and more access to the platform and increase its audience [6].

To develop social welfare from multiple perspectives, for example, Assistance to Families with Dependent Children (AFDC)/WIC (Women, Infants, and Children) Program/Veterans Program, etc. The Uber Eats reward system is an example to see that more drivers and consumers can benefit from the social welfare of Uber Eats, which also increases the interaction between consumers and the platform. Helping driver-provide scholarships for drivers, supporting black-owned restaurants, helping uplift people, stopping pollution, and investing in solutions are all ways that consumers can use points to develop the social welfare in the uber Eats reward system. To some extent, increasing social welfare to the extent of special groups of people can also make the platform more competitive. The reputation of increasing the social welfare help platform attracts extra people who want to help society, also the group of people who need to improve their social welfare. By designing a better mechanism to docking of goals of the platform and social welfare, promote win-win outcomes for all parties.

Moreover, in the research done by Jay Pil Choi [6], there is one more important perspective we need to consider which could provide us some inspiration of how to apply the tying strategy to an appropriate extent. In the paper, it describes a situation where tying prevents consumers from multihoming and shows that without the support of multihoming tying reduces welfare. So, these contradictory results lead to an important acknowledgement that under the network effect, we enjoy the benefits the multi-homing brings to us such as increasing social welfare, but we also need to be cautious of applying a tying strategy.

## 6. Conclusion

Though together, this work summarized three main points from the multihoming competition in the two-side market observation. First, the diversity of platforms and customer differentiation can affect the competitive strategies that firms apply to delivery platforms and the competitiveness of bilateral delivery platforms. More diverse the platforms, the fiercer competition between this market. Moreover, more customers with different demands in one platform, more competitive strategies are required for this platform. Second, more detailed and unique customer segmentation can help dual-market platform companies win more consumers and growth opportunities. Bilateral markets should focus more on audience segmentation and consumer loyalty, which will affect market share and company value. Consumer loyalty provides a visual indication of how competitive and profitable the dual marketplace is. Finally, a multi-homing platform can further improve social welfare by improving and better helping the environment and the people in many ways and increasing customer and social connectivity. Positive social welfare can promote investment in human capital and the

formation of active labor markets and employment policies. By doing this way will improve the future competitiveness of platform companies.

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