

The Distribution Mode and Traffic Safety Hazards of Food Delivery

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Abstract

With the development of e-commerce platforms and the improvement of electronic payment security, food delivery has become one of the important businesses of catering industry. The traffic safety of food delivery vehicles has aroused widespread public concern, and it has also had a greater negative impact on food delivery. This article takes the riding safety hazards of electric vehicle as the background, summarizes the distribution mode and vehicle behavior characteristics of takeaway vehicles, analyzes the hidden safety hazards and their causes of food delivery vehicles, and proposes corresponding improvement measures.

Keywords

Food delivery; distribution mode; traffic safety hazards.

1. INTRODUCTION

With the development of e-commerce platforms and the improvement of electronic payment security, food delivery has developed rapidly, and its vehicle delivery time has become an important criterion for measuring the platform's logistics scheduling capabilities and service capabilities. Consumers have higher requirements on the timeliness of delivery, which to some extent leads to the transportation problems of catering takeaway.[1] The scale of China's food delivery market exceeded 600 billion yuan in 2019, but takeaway delivery workers have become one of the occupations with the highest casualties. How to reduce safety problems in real life has become an urgent problem for food delivery transportation.

Food delivery has the characteristics of timeliness, regionality and suddenness. The working mode of takeaway riders is usually "order-grabbing". Electric vehicle for food delivery have potential safety hazards. Traffic fatalities related to electric vehicle are showing a rapid growth trend, which also increases the difficulty of managing takeaway distribution problems. [2,3] The research results of this article can provide reference for the management of takeaway platform and the traffic supervision decision of related departments.

2. DISTRIBUTION MODE AND SAFETY HAZARDS OF FOOD DELIVERY

2.1. Distribution Mode of Food Delivery

There are three main operating modes in food delivery distribution, takeaway merchant distribution mode, takeaway platform distribution mode and third-party distribution mode. The roles played by catering takeaway platforms and merchants are quite distinct under three modes.

In the merchant distribution mode, consumers generate orders on the takeaway platform, the platform releases the order to the corresponding merchant, and the merchant receives the

order and delivers it independently, as shown in Figure 1. Under this distribution mode, the platform only assumes the role of the medium, but the delivery quality of the merchants has great uncertainty.[4] On the one hand, takeaway merchants cannot balance in-store food and takeaway delivery during peak dining periods. On the other hand, most of the distribution riders are in-store employees and have low safety awareness. In order to carry out the next round of distribution, they often speed in crowded places and make calls while riding. Such behavior is likely to cause collisions with pedestrians or vehicles, and also makes the delivery problem in this mode.

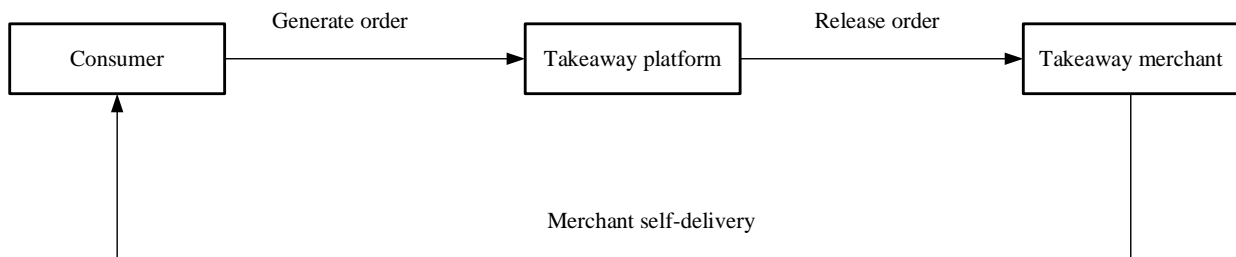


Figure 1. Takeaway merchant distribution mode

In the delivery mode of the takeaway platform, through the restaurant franchise, consumers generate orders on the takeaway platform, and the platform releases the orders to the corresponding merchants in accordance with the area where the order is located. After the merchant receives the order, the rider of the takeaway platform goes to the store to pick up the meal, as shown in Figure 2. The meal picking and food delivery are completed by the take-out platform. To a certain extent, the distribution time can be planned reasonably, which is conducive to improving the quality of distribution and customer satisfaction.[5,6] However, the salary of delivery riders on the takeaway platform is directly related to the order volume, and the “order-grab” mode often leads to too many orders for delivery staff to deliver. In addition, the threshold for recruiting riders on takeaway platforms is very low. Many riders despise traffic safety issues and even escape after accidents, which brings many potential safety hazards.

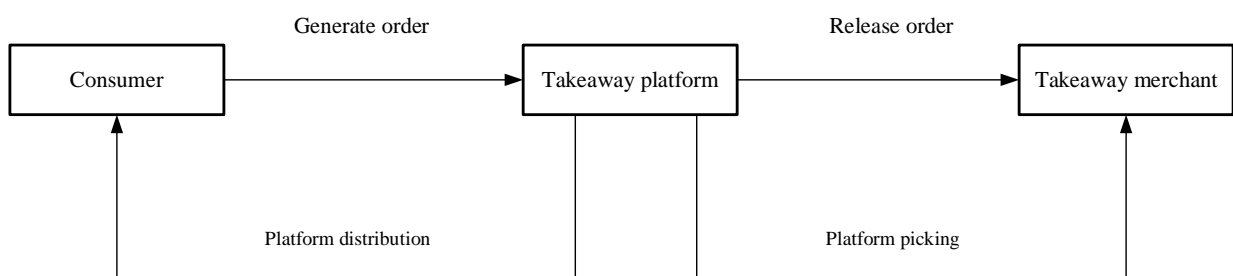


Figure 2. Takeaway platform distribution mode

In the third-party distribution mode, the platform entrusts the distribution work to the third-party logistics company, and supervises the distribution behavior through the information system, as shown in Figure 3. This mode is conducive to platforms and merchants to concentrate on their own business. Third-party logistics companies are more professional and can carry out better route planning and standardization of delivery tools. However, there are currently few third-party logistics companies specializing in takeaway delivery, and this mode has not yet developed into scale.[7] At the same time, there is no effective management system to restrict

and regulate third-party companies to engage in food delivery. In addition, there is a big gap between the selection and treatment of third-party platform riders and regular delivery riders. The third-party riders have not undergone professional training and physical examinations, and the riders' own hygiene and food delivery equipment have greater food hygiene and safety risks.

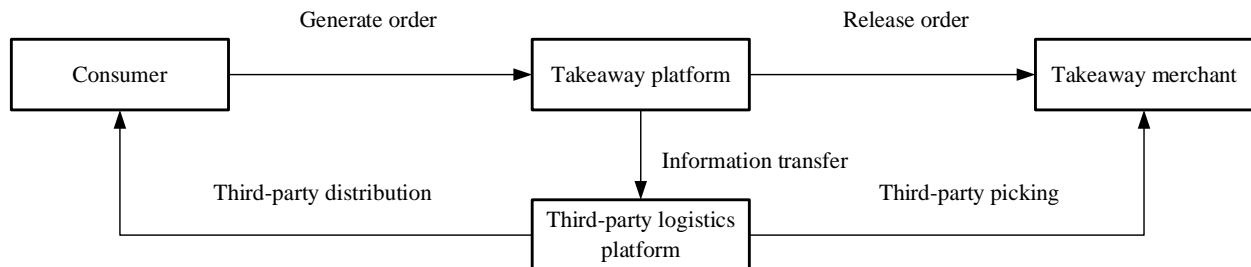


Figure 3. Third-party distribution mode

2.2. The Hidden Dangers of Food Delivery Vehicles

Electric vehicle have the characteristics of low price, convenient riding, fast speed and low barriers to entry, and have become the main means of take-out logistics. At present, the speed of most electric vehicle on the market exceeds the national regulation of 20 km/h, which leads to a significant reduction in the safety factor. The vehicle distribution in food delivery includes the following safety hazards analysis.

(1) Unreasonable take-out box settings

The setting of the takeaway box is not reasonable enough. For the rider's driving safety considerations, the take-out box should not be placed where the feet are placed; the take-out box in the back seat of the electric vehicle must be firmly connected to the body, and the body needs to maintain a high balance and stability after increasing the weight to prevent rollover.

(2) Safety hazards and helmet problems of electric vehicle

There are almost no safety protection measures for electric vehicle, and riding risks are greater. When an accident occurs, the riders and passengers on the electric vehicle are often injured. Takeaway who ride electric vehicle rarely wear helmets all the time. Affected by many factors such as overheating in summer, wearing a helmet that affects hearing, discomfort in wearing, etc., wearing a helmet on the delivery has not really been implemented.[8]

(3) Superficial safety awareness of riders

The safety awareness of takeaway riders is shallow, and their work mode is usually "order grabbing", and their income is directly related to the delivery volume. Therefore, many riders usually take a large number of orders for higher economic income, resulting in insufficient delivery time. There are excessive speed and making calls while riding, leading to takeaway traffic accidents are frequent and on the rise.

(4) Lack of industry norms and laws and regulations

Enterprises hope to increase the speed of food delivery to compete for the market, but they are unwilling to increase labor costs. Enterprises underestimate the illegal traffic behaviors of riders and use lower illegal costs to obtain higher economic profits. The distribution process management is unscientific and lacks standard industry norms. The "Takeaway Delivery Service Specification" imposes certain restrictions on the food delivery industry. However, the regulations are not binding and compulsory. There is no relevant law stipulating that takeaway platforms are obliged to review and be responsible for cooperative catering merchants, and the regulatory law is lagging.

(5) Inadequate supervision of traffic safety agency

Large number and high mobility of takeaway riders, is unfavorable to the management of traffic safety agencies. Law enforcers lack strict inspections on take-out delivery vehicles, and it is difficult to limit the speed of take-out electric vehicles. The traffic safety agency's supervision of non-motorized vehicles is weak, and the riders are mainly educated, which cannot serve as a warning and deterrent.

In view of the hidden safety hazards of the takeaway vehicles, corresponding improvement measures are proposed. For example, reasonably design the size and placement of the take-out box; require riders to wear helmets; conduct vocational training for riders; improve laws and regulations and industry systems; strengthen the supervision of electric vehicles by various departments. In addition, the current positioning technology can be combined with regional speed limits, assisting in planning reasonable routes,[10] and the platform uses red envelopes or other methods to encourage ordering meals in advance, reducing the concentration of food delivery and reducing time pressure on riders.

3. CONCLUSION

Food delivery has become a common way of consumption, and there are many hidden dangers in vehicle delivery. This article starts with the three delivery modes of food delivery, analyzes the hidden dangers of food delivery, and proposes that it requires the joint efforts of riders, platforms and law enforcement agencies to improve the safety of food delivery vehicles.

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