

Introduction

While food delivery is becoming increasingly popular among office workers and students, it has also attracted the attention of the whole society to food safety in online catering. On March 15, 2016, it was exposed that the food production environment of merchants on the "Ele.me" platform was dirty and poor, and there were a series of problems such as false propaganda on the platform, which made the platform lack of credibility. Therefore, it is necessary to strengthen food safety supervision and solve the safety problems of takeaway food.

Mathematical Formulas

$$\begin{cases} \frac{dx}{dt} = x(1-x)[S_g - C_g - yS_t + (1-y)(f_t + \beta f_g)] \\ \frac{dy}{dt} = y(1-y)[xS_t + x f_t + \beta f_t - x\beta f_t - C_{t1} + C_{t2}] \end{cases}$$

Research Questions

Previous studies have mostly focused on how the government and online catering platforms can cooperate and co-govern, but few scholars analyze the strategic choices and influencing factors of the government and online catering platforms from a quantitative perspective.

Methodologies

Therefore, this paper uses the evolutionary game model to analyze the factors that affect the government and online catering platform strategy choices.

Figures

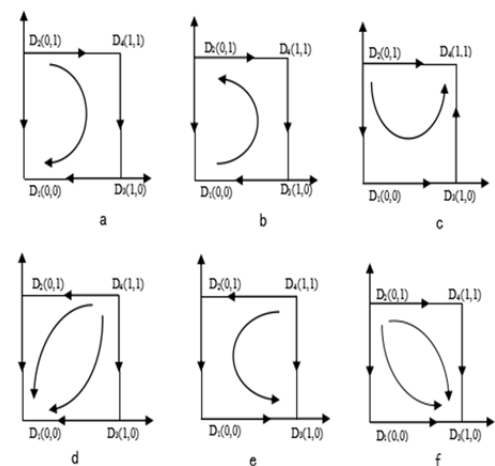


Figure 1. Phase diagram of dynamic evolution in six cases

Tables

Table 1 Government-Online Catering Platform Evolutionary Game Revenue Matrix.

		Government	
		supervised (x)	not supervised (1-x)
Online catering platform	supervised (y)	$G_1 + S_1 - C_{t1}$	$G_1 - C_{t1}$
	not supervised (1-y)	$G_1 - C_{t2} - f_t$	$G_1 - C_{t2} - \beta f_t$

Conclusion

1) In the takeaway food industry, the development of the national economy can effectively promote the improvement of its safety.

2) The benefits of the government and online platforms affect the strategic choices of both parties.

3) Punishment is also an important factor that affects the choice of online catering platforms or not to choose supervision strategies.