

The Hong Kong Polytechnic University
Department of Logistics and Maritime Studies
Research Seminar

Coordinating Vaccine Market via Government Subsidies under Customer Regret

by

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Venue: R503, Shirley Chan Building
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(Conducted in English)

Abstract:

Prevention of influenza has been a social concern for a long time. But the coverage of vaccination, which is the most effective way to prevent people from infection, is always undesirably low. Due to the imperfection of vaccine and herd immunity, customers' decisions made under uncertainty may lead to regret ex post. We consider that the customers in a vaccine market would take this anticipated regret into consideration when making decisions. In this study, we connect customers' free-riding behaviour to customer regret and formulate the demand model, where the customers make their decisions in order to maximize their own utility consisting of economic utility and emotional utility (i.e., regret). As the coefficient of customer regret increases, more and more people would like to be free riders, which is a main cause of the low vaccine coverage. The vaccine market coordination is then influenced. In our model, we have not set positive restriction on regret because when a person finds the utility of his choice is better than the utility of the alternative choices, he will feel happy or pride of his choice, which we use the negative regret to represent. When the coefficient of customer regret is large enough, we find that the socially optimal vaccination coverage does not encourage individuals to be risk-taking customers any more. Moreover, we extend our model to include incomplete information demand and oligopoly supply, and find that both inaccurate estimation of customer regret and incomplete competition in supply will lead to imbalance of supply and demand. Finally, we consider the government subsidy allocation in both the supply and demand sides, and present a mechanism to help the market to achieve the highest equilibrium coverage, which is applicable even when the government's budget is limited.

Keywords: influenza vaccine; customer regret; free rider; subsidy

Bio:

Yuqing PAN is an MPhil student in the Department of Logistics and Maritime Studies, The Hong Kong Polytechnic University. She received her Bachelor Degree in Traffic and Transportation from the Central South University in 2018. Currently, she is pursuing her Master of Philosophy under the supervision of Prof. Daniel NG, Prof. Edwin CHENG and Dr Peter LEE.

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All are welcome!