

Omnichannel decisions under evolving channel preferences during a pandemic: A regime switching game

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ABSTRACT

The decision-making process within an omnichannel supply chain was significantly impacted by the COVID-19 pandemic. Challenges in decision-making arose due to uncertainties in product demand, alterations in consumer preferences regarding distribution channels, and disruptions in the upstream supply chain. In this study, we have developed a model that encapsulates the evolving consumer channel preferences and the uncertainties associated with a subsequent wave of the pandemic. We have delved into the examination of how the pandemic's anticipation and impact affect channel pricing, channel promotion, and ultimately, the retailer's profits. Our findings underline the necessity for retailers to gauge the probability of a pandemic wave to make informed decisions about channel pricing and promotion strategies. Furthermore, we have determined that consumer channel preference plays a pivotal role in shaping a retailer's profitability. Notably, the pricing of the e-channel should be increased soon after the onset of a pandemic wave. Additionally, it may be prudent for the retailer to curtail promotions for the retail channel when there is a noticeable shift in consumer preference towards the e-channel.

Keywords: channel pricing, channel promotion, stochastic optimal control, pandemic, stochastic process, omnichannel retailer