The Impact of KFC Product-harm Crisis in Chinese Market: Rise or Fall Together?

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Abstract

In the current business world, more and more firms are under crisis as they bring harm to consumers due to the quality problem of their products. The concerns for the food quality have been rising in the recent years in the Chinese market, such as a 2008 scandal over deadly baby formula, restaurants using and reusing cooking oil that was scooped from gutters, and the contamination in some Chinese vaccine products. In spite of the existing insights about the product-harm crisis, such as the impact on firm performance, product recall or brand equity, the literature has not structurally explored how product-harm crisis may have an influence on consumers' intrinsic preference, and how such an influence further leads to an impact on market expansion strategy of the focal firm and its competitors. We utilize the incidence of the product-harm crisis of a leading global fast-food chain in the Chinese market to investigate this issue. We aim to study how the incidence of product harm crisis may affect consumers' intrinsic preference for fast-food and firms' entry costs, and how changes in consumer preference and entry costs will convert to changes in KFC's own entry and expansion strategy, and furthermore, how such a change will cast spill-over effects on its rivals.

We develop a dynamic oligopoly model to study the strategic interactions among firms conditional on controlling the unobserved market heterogeneity (i.e., unobserved market type). Firms face an intertemporal trade-off between incurring cost to expand now to gain from the new scale of outlet network and waiting to adjust later to save the cost now, though they may sacrifice by receiving lower future returns. We collect the entire expansion history (i.e., from 1992 to 2018) of the major players (KFC, McDonald's, and Burger King) in the western fast-food restaurant industry across 288 markets in China. We estimate the model using two-stage approach embedded with EM-algorithm proposed in Arcidiacono and Miller (2011). In the first stage, we directly estimate the transition matrix for all state variables from the data and the type-specific reduced-form policy function for each firm using EM-algorithm. In the second stage, utilizing the estimated states transitional matrix and reduced-form policy function from the first stage, we estimate the payoff parameters using a minimum distance estimator. Conditional on the model estimates, we conduct the counterfactual analyses to explore how firms' market expansion strategy is influenced by consumers' intrinsic preferences change caused by product crisis. The preliminary findings show that consumers' preferences for fast-food react to the crisis, and firms adjust the expansion path accordingly. Furthermore, the impact on the focal firm has asymmetric spill-over effects on the rise or fall of rivals.

Keywords: Dynamic oligopoly model, Unobserved heterogeneity, EM algorithm, Product harm crisis, Fast-food industry

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