

Competitive Innovation

Sudhakar D. Deshmukh

Kellogg School of Management
Northwestern University Evanston, U. S. A.

Abstract

Better quality products usually capture larger market shares and yield higher profits to the producing firm. However, developing better quality products takes longer time, during which a competing firm may develop and introduce its product to usurp a market share, leaving less for the laggard to capture. Competing firms must balance these two effects in determining their strategies of new product development and timing of its introduction.

We model this innovation competition as a stochastic game between two firms and characterize their equilibrium strategies. We show that in equilibrium, each firm will set a minimum target quality that it will aim to develop before introducing the product. The technologically stronger firm is shown to set a higher target quality and capture a larger market share than the weaker firm. Competition to be the first is shown to induce both firms to set lower targets and introduce inferior products sooner than they would without competition. However, the consumers are shown to be better off with competition than with a weak monopolist alone. Moreover, a strong monopolist is shown to yield an even better outcome for the consumers, which is in fact proved to be socially optimal. Finally, this socially optimal outcome is shown to be attainable also with competition among equally strong firms, and in fact attained at a pace faster than that with a monopolist alone. Thus, competitive innovation among competitors of equal strengths is shown to be best industrial structure for the consumers.
