A system dynamics model of technological innovation with integration of adoption dynamics, strategic interaction and network externality.

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Literatures in technology characterize the dominance as the key event in the evolution of an innovation in industrial change. However, the emergence of dominance has been typically viewed as a black box process involving sophisticated interaction of technological and non-technological factors. From microeconomic perspective, diffusion is at the core of the process of evolving. The strength and speed of diffusion influence the emergence of dominance among competing technologies. Bass' diffusion model of adoption, derived from the epidemical metaphor, considered the influence among adopters and potential adopters, had a critical contribution to this perspective. This research built a system dynamics model, which first considered Bass' heterogeneity of adoption dynamics, and then further considered the strategic interaction and effect of the network externality. The strategic interaction emphasizes the interdependence of decisions between leader and follower. The network externality exists when a potential adopter's valuation of a product increases as a function of its adoption by other adopters. Based on the core diffusion process with the integration of adoption dynamics, the strategic interaction and the network externality, we expect to build a more dynamic and comprehensive model to have better insight of the evolution process so as to improve the management of technological innovation.