Dynamics of Consumer Demand for Proprietary Software in the Presence of Open Source Software

Over the last two decades, the software industry has witnessed the outstanding growth and adoption of the Open Source Software (OSS). Industry analysts claim that the market share of Proprietary Software (PS) has been shrinking because of the competitive pressure from OSS. Nevertheless, many PS vendors, such as IBM, Oracle, etc., are surprisingly active participants in OSS development and community, which could be particularly instrumental in helping their PS sales. Therefore, it remains largely unclear as to the net impact of OSS entry on the demand for PS. The resolution to this central tension in the extant literature has immense theoretical implications for the research on competitive rivalry as well as managerial implications for PS vendors regarding their product and pricing strategies. To the best of our knowledge, this study provides a first empirical investigation to fill this lacuna in the current literature. We draw on the *market cannibalization- expansion theory* in the literature of competitive rivalry entry, and argue that the net impact of OSS entry on the demand of PS depends on the dynamic interaction of these two countervailing forces. We are particularly interested in (1) how the impact of OSS entry on the demand for PS varies across different software categories, and (2) how consumer heterogeneity differs across different software categories.

In order to address our research questions, a unique and comprehensive dataset is gathered, consisting of the market level data of the entire software population from 1995 to 2010 with approximately 100,000 PS software and 130,000 OSS software. We follow Gowrisankaran and Rysman (2012) and propose a dynamic model of demand for differentiated products to quantify the effect. Our preliminary results reveal that the entry of OSS does hurt the demand of PS in some software categories, such as Multimedia, Security, but not others, such as Office Suite, Communication. We suggest several underlying mechanisms through which the growth-driving effect of OSS entry on PS could be realized, i.e., excessive switching costs, OSS entry captures consumer segments untapped by PS, and OSS entry expands demand for PS through sampling effect.