

Digital Personal Assistants as Gatekeepers for Consumption? - How Information Intermediaries Shape Competition

Abstract

The paper applies modern industrial economic theories to analyze the effects of a new medium for online consumption, namely digital personal assistants (DPAs, e.g. Apple's Siri, Amazon's Alexa, Google Assistant), on competition in upstream markets. A DPA is an automated system that serves personal needs and interacts with the user in natural language, meanwhile applying original and third-party services to obtain information and perform various actions. Among the many services that a DPA can perform (e.g. providing answers to wide range of questions, control smart-home equipment, etc.), we focus on its role in assisting shopping through search and recommendation services as well as through conducting routine shopping of recurrent consumption goods (from daily products to re-ordering toothpaste) by itself. Here, DPAs act as information intermediaries who collect and pre-select information and transmit it to their users. They perform their tasks based upon algorithms that seek to match the perceived preferences of their users in the best possible way. For this purpose, the DPA collects personalized data from its user and employs it to calibrate its algorithm. Ceteris paribus, this should lead to search and recommendation results as well as routine shopping services that maximize the welfare of its user due to being as preference-conformal as possible. However, the providers of DPAs may experience additional incentives, in particular if they are vertically integrated or run co-operations with upstream suppliers of consumption goods. For instance, Amazon's DPA "Alexa" will prefer to buy from Amazon, or "Google Assistant" from Walmart (due to Google-Walmart-cooperation). Consequently, scope for biasing search and recommendation results as well as shopping services in favor of the business interests of the DPA provider become a concern.

Based upon an industrial economic model, we identify that most challenges from DPAs are associated with market power on the DPA market and degree of rationality of DPA's consumers' behavior. We found that it is difficult to fully avoid limitations for competition due to economic characteristics of DPAs: the nature of a DPA as an assistant to all personal needs point to single-homing on the users' side and becoming the new gateway of consumers, for better serving needs of user DPA is firstly learning his preferences and this increases switching costs and supports lock-in effect on consumer side which due to strong network effects attracts more suppliers of goods. Additionally, behavioral limitations of users along with imperfection and asymmetries of information offer a scope for DPA-services exploiting bounded-rational consumers, who may develop trust in their digital butlers and see them as a main information gatekeeper. Thus, distorting competition on upstream markets connected via such gatekeeper cannot be declined.

Our study is designed to investigate these interrelations, to draw attention of regulators to potential threats of competition in the situation where DPAs are gatekeepers for consumption, and also to increase user awareness of possible risks and downsides.

Keywords: information intermediaries, gatekeepers, media economics, economics of privacy, competition economics